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**AN INVESTIGATION INTO TEACHERS' EXPERIENCES OF IN-SERVICE
TRAINING AND PROFESSIONAL DEVELOPMENT IN RWANDA**

SUBMITTED BY:

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A thesis submitted in partial fulfilment for the degree of Doctor of Education (EdD) of
the University of Sussex.

School of Education and Social work

University of Sussex

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DECLARATION

In accordance with the regulations of the University of Sussex, set out below are the required declarations and sources of the information used in completing this study.

I hereby declare that this thesis has not been and will not be submitted in whole or in part to another University for the award of any other degree.

Signed.....

March 2012

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ABSTRACT

The purpose of this research is to investigate teachers' experiences of in-service training and professional development in Rwanda. It focuses on a programme for untrained secondary school teachers which aimed to equip them with the knowledge, skills and values in line with current government policy. It was concerned with whether the teaching and learning approaches used in the training programme were learner-centred, and the impact on teachers' professional identity. This is viewed against the backdrop of the assumptions that professional development improves the teaching and learning process and that teaching and learning improves with increased professional development provision. These dynamics are analysed from the perspective of the teachers' views and some observed practices, the theoretical principles of teacher professional development, and the policy guidelines of the Ministry of Education. As such, the research employs a qualitative methodology.

The study has revealed that the training programme was presented, whether deliberately or by default as a course for upgrading teachers' status, and as a way of providing the superficial characteristics of a successful professional training. It has highlighted the challenges of the technical application of a model rather than identifying the needs and conditions for teacher engagement with their students in order to improve their own classroom performance. This is reflected through the overestimation of the trainers' capacity and the underestimation of the teachers' experiences, the lack of mastery of content, and the non-recognition of teachers as teaching and learning resources. There are also issues related to communication and interaction between the actors in the training programme which was a crucial factor that reflected the power relations between the trainers and the teachers. The teachers were being regulated by the terms of engagement set by the trainers instead of a collaborative effort. It highlights the restrictive nature of the assessment system, and interrogates the differences in the understanding of what teaching and learning is or should be, and what actually took place in the training of the teachers and of the students in the secondary school classrooms.

The research has highlighted some issues which are not necessarily of a professional nature, but which nevertheless are of significance to the understanding of teacher

professional identity. The teachers associate identity formation with the social developmental issues of qualification, status, recognition, and self-esteem. This has implications for the policies of the Ministry of Education viewed against the needs and conditions of the training of the secondary school teachers who are drawn mainly from rural schools. There are concerns about whether the programme appreciated the conditions in the schools, or whether the primary mission was to upgrade the qualifications of the teachers and not necessarily the upgrading of knowledge and skills. Finally, the research contributes to the illumination of both literature and methodology for future studies on the subject of teacher professional development, and to the current debate on its benefits and impact on professional practice in Rwanda.

CHAPTER 1: INTRODUCTION

1.1: Overview

The purpose of this study is to research the Rwandan in-service teacher professional development programme from the perspective of secondary school teachers in order to find out their experiences, and how such experiences impact on their professional identity. The intention was to explore the teachers' opinions and ideas of their training through the understanding of their teaching and learning experiences. The teachers who graduated from the in-service programme are the people best placed to know about what effect the training has had on their professional development. I made a choice to engage with this group of teachers whose knowledge, ideas and experiences I required for purposes of the research. They know the importance and have personal expectations of their own teacher professional development.

As a senior member of the Ministry of Education management team, I was aware that this training programme had been going on since 2001. However, to date there has been no evaluation of the programme. Neither did I seek to do an evaluation in this study. My interest was to research the programme by finding out through the teachers' experiences what the training had meant for them. By seeking teachers' experiences, views and opinions, I viewed the research as grounded in the interpretive tradition which entails the development of an understanding of social life. The intention was to find out what was meaningful and relevant for future training programmes in Rwanda.

The research makes it possible to compare the teachers' experiences during their training with their current understandings of the teaching and learning process. I did not seek to capture an objective truth, nor did I seek to directly capture these teachers' understandings as they are mediated by my own understandings given my own position as a senior member of the Ministry of Education management team. The intention was to give voice to the teachers through their stories and understandings of the teaching and learning process. This was facilitated through my theoretical understandings which required interactions with the formerly untrained teachers regarding the experiences of their training, and the impact on their professional identity. The identity question is quite complex since it stems from experiences sometimes of previous events, situations

and circumstances. Dunne et al, (2005:14) argue that when we take on a role that is both complex and demanding ‘it becomes part of our social repertoire, it becomes a matter of identity, and to an extent, it conditions both how we understand ourselves and also how others see us’.

Conceptually, I was guided by three sets of assumptions, namely; that professional development improves the teaching and learning process, that teaching and learning improves with increased professional development provision (Government of Rwanda, 2005:14), and that learning is linked to practice through identity which involves among other things, the beliefs which the teachers hold about their professional identities. These assumptions are central to my thesis. Interacting with the teachers was central to my own enquiry and subsequent understandings of the in-service teacher professional development in Rwanda. Effectively, this means that my enquiry and understanding is also mediated by the understanding of teachers’ own experiences.

Thus the purpose of this study is to illuminate the practical knowledge as it relates to the findings of my research. This demands a qualitative methodology which formed the basis for the formulation of research questions, analysis, discussion and reflection. The study employs the use of interviews complemented by classroom observations and documentary analysis. The participants comprise the first cohort of the formerly serving, but unqualified secondary school teachers who graduated from the in-service training in 2007. They are the pioneers of the inservice training programme who graduated shortly before I embarked on this research in October 2008 and therefore they had fresh memories of their training experiences. I discuss the research findings from the perspective of the teachers’ experiences, the teaching approaches employed during the training, some observed practices, and the impact it had on their professional identity. The analysis is informed by the theory of teacher professional development and various Ministry of Education policies related to teacher training in Rwanda.

1.2: Rationale

My interest in teacher professional development has been motivated by personal and professional experiences as a secondary school teacher in Uganda and Lesotho, a teacher educator in Botswana, and as an educational policy implementer with input into policy making in Rwanda. I have therefore developed some curiosity about what goes

on in schools as a starting point for developing an understanding of the teaching and learning process. Since 2001, the Ministry of Education has emphasized the importance of continuous professional development of teachers through in-service teacher training with a particular focus on learner-centred teaching and learning approaches. This emphasis has been enshrined in various policies (Government of Rwanda, 2002 a; 2002, b; 2003; 2004; 2005). In 2001, the Ministry of Education set up a committee to work out a mechanism for starting a programme for serving, but unqualified teachers. The Committee recommended that Kigali Institute of Education (KIE) should implement the programme on behalf of the Ministry of Education since it is the only public degree awarding educational professional institution in the country. The aim was to provide sufficiently trained and competent teachers equipped with relevant knowledge, skills and values.

It is not known what difference in-service teacher training makes in Rwanda in terms of teachers' experiences, how content knowledge is linked to pedagogical knowledge, and how it impacts on teachers' professional identity. In Rwanda, there is no published research in this area which is why I have developed interest in this research. The idea was to interrogate the meaning of in-service teacher training as experienced by the teachers during their training. This was explored through three key themes, namely: teachers' experiences of their training, whether the training had employed learner-centred pedagogies, and how the training might have impacted on the teachers' professional identities.

The analysis of the current theory of teacher professional development, and interactions with teachers regarding their experiences during the training illuminate the professional development needs of Rwandan teachers on the in-service training. From both theoretical and professional perspectives, I have learned to question the way current teacher training in Rwanda is conceptualised as a starting point for developing an understanding of the teaching and learning process. I have also learned not to ignore the influence and significance of the agencies such as training institutions both inside and outside the education system (Darling-Hammond et al, 2002; Cochran-Smith, 2004; Cochran- Smith, 2001; Labaree, 2000). These experiences have motivated me to question the role of teacher professional development in relation to the whole education system.

Teachers develop their beliefs and concepts about teaching over years of being students themselves and from their own experiences as teachers. Interpretation of their daily experiences in the classroom in terms of this previous experience and knowledge produces learning that influences classroom practice, and teachers' beliefs are more powerful than their knowledge in influencing the way in which they teach (Tobin, 1996; Kagan, 1992; Perry, 1990). Also, in the teaching and learning process, some of the most enduring memories of students are of the teachers who not only stimulated knowledge and understanding of subject matter to the class, but also raised high expectations among their students, promoted a sense of motivation and interest for learning, and who were facilitators allowing students to reconstruct, extend or replace their existing knowledge (Bell and Gilbert, 1996). However in developing countries, teacher education seems to have followed a system whereby many trainees were recruited from primary and secondary schools, confined to residential colleges and taught by tutors who lack deep experience of what it means to teach at school level (Lewin, 2003).

The situation described above is quite similar to our own in Rwanda which I analyse in subsequent chapters. The analysis shows that the Rwandan Ministry of Education has not been able to identify a set of teacher professional development needs and priorities which all teacher education institutions should attempt to meet in terms of classroom practice. For these reasons and for purposes of prioritisation, I focused my attention on the experiences related to the nature of professional development of serving, but unqualified teachers in Rwanda. I was of the view that the findings of my study would draw attention to other developing nations in search of alternative models of teacher professional development.

Against this backdrop, I argue that the process of change in teacher professional development is a complicated one because it is dynamic, and that teacher professional development cannot be separated from the context of its implementation that is, the school system. Its relevance is reflected in student achievement and by implication, in teaching and learning, and the importance of the school as an arena where in fact the teacher education curriculum gets implemented can not be overemphasised (Darling-Hammond, et al, 2002; Ben-Perez, 2001; Cochran-Smith, 2000). However, this emphasis on schools as centres of professional learning is complicated by the realisation

that such an approach is also reliant on teacher educators' individual and collective inputs as change agents; and the challenge for re-conceptualisation of teacher professional development therefore may lie in attempting to bridge the gap between schools as institutions of change, and educators as personal and collective agents of change (Fullan, 2007; Craig, 2003; Hargreaves, 1995).

Initially, I was apprehensive about the availability of literature on this subject as there are no books or other published research written on school-based in-service professional development in Rwanda specifically, and not much either on Africa and developing countries in general. However, Sussex School of Education subscribes to a host of international teacher education journals which form the bulk of the literature of this thesis. Although there are numerous articles on teacher education, the challenge was to select and find the most relevant ones to my enquiry. I also was able to gather other materials in form of research reports. These initially formed the basis for my conceptualisation of the subject of teacher professional development, gradually expanding both my understanding and search for more literature. Since it is not only developing countries that have challenges in teacher professional development, this thesis has benefited from experiences derived from developed country contexts, bearing in mind along the way that issues and challenges in teacher professional development are context specific.

1.3: Structure of the thesis

In this thesis, Chapter 1 introduces the rationale for the study. Chapter 2 looks at the context into which it is located. It problematises teacher training in the light of the policies that underpin how it is developed and practised. It explores a position in which a locally designed programme of school-based teacher training began to take shape as a future teacher training model in the Rwandan teacher education system.

Chapter 3 explores the theoretical framework that forms a basis for the understanding and development of research questions and methodology. It explores literature related to teacher professional development and assesses its relevance to the Rwandan context. It highlights the link between theory and practice in teacher training. An attempt is made to explore the link between content knowledge, pedagogical knowledge and

pedagogical content knowledge in teacher professional development, and how that might help shape Rwandan teacher professional identities.

Chapter 4 deals with issues related to methodology and methods. It describes how the research was conducted. I begin with the rationale for use of qualitative methodology and then explain my research design and research methods. This is followed by an explanation of data collection and sample. I give details on the process of interview design and the subsequent data collection. I then elaborate on how I planned my data analysis and the strategies I employed.

Chapter 5 presents the empirical data from the research. It highlights the teachers' views by way of giving the teachers a voice through their experiences and views about their training. Chapter 6 analyses the teachers' experiences further with reference to three groups of key actors in the training namely; the lecturers training the teachers, teachers teaching the secondary school students, and the Ministry of Education that had commissioned the training. Chapter 7 concludes by reflecting further on the research journey and proposes a way forward for Rwandan future teacher professional development.

CHAPTER 2: CONTEXT

2.1 Introduction

Rwanda is a small country of 26,338 square kilometres. It has a population of about eleven million inhabitants and located in the heart of Africa. The country is landlocked, sharing a border with the Democratic Republic of Congo to the west, Uganda to the north, Tanzania to the east and Burundi to the south. In 1994, the country was plunged in the worst genocide the world has experienced in recent times, and the Ministry of Education had found itself in confusion and utter bewilderment after the genocide. Following this tragedy, there were enormous challenges facing the country in terms of moral, social and material reconstruction and the task of instilling social and cultural values seemed to be falling on teachers (Rutaisire, et al. 2004; Rutaisire, 2007). This major effort of reconstruction and rehabilitation was taking place in a context where as everyone saw it, the education system had failed the nation and needed fundamental transformation. Despite the untold havoc, the Rwandan education system had recovered remarkably well at least in quantitative terms, and the most impressive aspect of the system's recovery was the rapid pace of enrollment increase in the aftermath of the genocide (Obura, 2003). The Rwandan education system provides for six years (primary), three years (Ordinary level), three years (Advanced level), and four years of University education (6+3+3+4).

2.2: Impact on access and equity at school level and implications for teacher professional development

Immediately after the 1994 Genocide, the Government of Rwanda had as one of its priorities to bring back children into schools. According to the World Bank (2003:19), the period 1994 to 1999 saw the numbers of children in primary school 'surpass the number that would have been enrolled had the system expanded at historical rates of increase, and in primary schools the gross enrollment ratio at 107 percent exceeded the corresponding ratio for the average low-income country in Africa at the time.' The challenge for the Ministry of Education was to manage the expansion while making sure that learning was taking place in the classrooms.

2.2.1: Access at primary level

By 1999, the Rwandan system compared favourably with that of other low-income countries in Africa in terms of the socio-economic disparities in educational access especially at the primary level, and ‘evidence existed to the effect that those children who completed 6 years of primary schooling usually remained permanently literate and numerate as adults’ (World Bank, 2003:26). The Bank noted that universalizing primary school completion was thus entirely consistent with what was needed to build the human capital base for broad based economic and social development, and the system was already structured accordingly. At the same time, the selection arrangements for progression to post-primary levels were also already in place.

Table 2.1 ACCESS TO PRIMARY EDUCATION

Year	2000/01	2002/03	2008	2009	2011
Total Students	1,476,272	1,636,563	2,190,270	2,264,672	2,341,146
Girls	737,833	825, 978	1,114,111	1,150,419	1,190,941
% of girls	50.0%	50.5%	50.9%	50.8%	50.9%
Boys	738,439	810,585	1, 076,159	1,114, 253	1, 150,205
% of Boys	50.0%	49.5%	49.1%	49.2%	49.1%
Net Enrolment Rate	73.3%	91.2%	94.2%	92.9%	95.9%
Boys	72.9%	90.1%	93.3%	91.6%	94.3%
Girls	74.9%	92%	95.1%	94.1%	97.5%
Classrooms	27,339	28,806	30,989	31,453	31,977
Schools	2,142	2,262	2,432	2,469	2,543

Source: Ministry of Education Planning Office (2011).

In addition to expanding access, the Education Sector Policy (1998:10) affirmed the importance the Government of Rwanda attached to the quality of teaching. The policy

made important assumptions about what constituted teaching quality, which were taken up in further policy documents. It specified that changes should be ‘aimed at using learner-centred teaching approaches in teacher training colleges in order to improve teaching and learning in primary and secondary schools’ (Education Sector Policy, 1998:10). The initial training of primary teachers was concentrated in twelve Teacher Training Colleges (TTCs) at the provincial level, while secondary school teachers would be trained at the newly established Kigali Institute of Education in 1996. Nonetheless, there were other immediate hurdles to overcome.

Table 2.2 QUALIFIED TEACHERS IN PRIMARY EDUCATION

Year	2000/01	2002/03	2008	2009	2011
Total Teachers	28,698	27,319	35,672	35,664	40,299
Teachers Qualified	17,995	23,271	30,171	31,126	34,172
% of Qualified Teachers	62.7%	85.2%	91.0%	96.0%	84.8%
Teacher / Pupil Ratio	1 :82	1 :76	1 :73	1 :63	1 :58

Source: Ministry of Education Planning Office (2011).

One of the immediate challenges at the time was that the rehabilitation of the education sector required investments of huge resources. There were challenges of inadequacy, inefficiency, malfunctioning and low quality output of teachers both at primary and secondary education levels, and this prompted the Government to quickly shift its focus from undertaking emergency measures to re-establishing the functioning of the education system as top priority in order to chart out an appropriate and fiscally sustainable course for the sector’s long-term development (World bank, 2003).

Another challenge was for the Ministry of Education to provide all children with the chance to complete primary schooling, but this required raising entry rates to grade one and providing opportunities for children to complete the cycle. There was also a very high rate of grade repetition in the system at about 34 percent. This demanded the establishment of mechanisms to bring this down to about 10 percent which ‘required measures to rationalize policies and practices regarding grade-to-grade promotion, as

well as improve learning outcomes to minimize the need for pupils to repeat' (World Bank, 2003:63). The pressures to expand access were already beginning to mount, as larger cohorts of children were completing the lower or ordinary level of secondary schooling. The challenge then was to ensure that the number of graduate teachers produced and their skills mix were compatible with the prospective demand for skilled labour.

There was the concern about the establishment of mechanisms for ensuring that the resources allocated to the education sector actually reached the schools. The physical and geographical conditions in Rwandan school distribution patterns created environments that were highly disparate, and the 'network of schools in Rwanda tended to emphasize size over proximity with most children taking at least 30 minutes to an hour to reach the nearest primary school' (Government of Rwanda, 1998:12). Accordingly by 1996, the Ministry of Education had started to extend the network of schools to situate them closer to pupils' homes in order to reduce the physical barrier to school participation, and to reduce the opportunity cost of attendance at school.

2.2.2: Access at secondary school level

At the same time as the primary school enrolment levels were expanding, there was also a need to expand the secondary school sector. In secondary education the number of students 'grew at 20 percent a year since 1996 implying that the system was nearly three times as large as it was in the earlier year' (World Bank, 2003:19). The table below shows secondary school enrollment expansion from 2000 to 2011.

The World Bank (2003) highlighted the dilemma facing the Ministry of Education which had to manage the expansion at the secondary school level, while at the same time attempting to train teachers using learner-centred pedagogies and increasing their numbers simultaneously, and that there were 'challenges of enhancing student learning so that the education system would transform its available resources into learning outcomes' (p.64). In spite of such demands on the education system, there were a 'limited number of qualified teachers at all levels to utilise existing learning opportunities in order for pupils to receive sufficient instructional time and be taught by well-qualified teachers' (Government of Rwanda, 1998:16). There was too, a problem

of rationalizing the deployment of secondary school teachers and re-assigning them between the lower and upper secondary levels according to their qualifications. This phenomenon was compounded by the non-existence of statistical data of the available teaching force to facilitate this enormous exercise given the limited resource envelop. Under the circumstances, planning for teacher professional development remained such a daunting task in the face of continuing expansion of enrolment at both primary and secondary school levels.

Table 2.3 ACCESS TO SECONDARY EDUCATION

Year	2000/01	2002/03	2008	2009	2011
Students	141,163	179,153	288,036	346,518	486,437
Girls	70,898	86,064	137,815	169,879	250,687
% of Girls	50.2%	48.0%	47.8%	49.0%	51.5%
Boys	70,265	93,089	150, 221	176,639	235,750
% of Boys	49.8%	52.0%	52.2%	51.0%	49.5%
NER Overall	5.7%	10.2%	13.9%	13.2%	25.7%
Boys	6.9%	11.3%	13.8%	12.8%	24.2%
Girls	4.5%	9.1%	13.9%	13.7%	27.2%
Classrooms	3,572	4,002	6,170	9,242	11,497
Schools	376	405	689	686	1,471

Source: Ministry of Education Planning Office (2011).

2.2.3: Implications for teacher training

The Government reaffirmed the need to support teacher training as one of its priorities. There was emphasis on ‘support to the democratic approach of pupil-centred, participatory and inclusive teaching methods’ (Government of Rwanda, 2002, b: 4). In addition, the curriculum would be ‘balanced according to the needs of the children, support the acquisition of scientific and technological skills within the context of locally available materials, emphasize learning by doing, and encourage active rather than passive learning through learner-centred teaching methods’ (Government of Rwanda,

2003:3). This was in line with Government's objective of improving the quality of education in both primary and secondary schools.

Improving the quality of education demanded well trained teachers who 'will ensure a complete understanding of the overall principles of the curriculum and a detailed understanding of subject curricula according to career plans of individual teachers' (Government of Rwanda, 2003:6). However, in the face of these policy pronouncements, there was limited capacity of the teacher education system to meet the demands of the expanded system, the 'heavy teaching load in primary schools caused by the double shift system needed to be addressed', and there was a 'shortage of qualified language teachers and too many teaching subjects taught in both primary and secondary schools' (Government of Rwanda, 2002, c:12). Priority was therefore shifting to building capacity at all levels, and to ensure monitoring to verify impact of policies in schools.

Traditionally, the Rwandan education sector had highly centralised decision making, the approach displayed some of the classic problems of central planning, and decisions at the centre were being made with insufficient awareness of the needs and priorities of those in the front line of service delivery. Even within the decentralised structures, educational decisions were taken by provincial Governors rather than educational managers. There was 'inadequate capacity and incompetence at all levels, inadequate utilities and economic infrastructure in decentralised units, limited and unpredictable funding, weak institutional coordination at all levels, and inadequate appreciation of the principles and values of decentralisation among educational planners and managers', (Government of Rwanda, 2003, b:7). Thus, clear planning and policy guidelines were required from the centre especially during the transition period to decentralisation from 2000 to 20005.

From 2005 onwards, priorities had begun to shift to the assessment of qualitative inputs most notably, the continuous professional development of teachers, and the use of interactive and learner-centred teaching methodologies through the development of various Ministry of Education policies. There was need to make better use of trained teachers through 'efficient time tabling, reduce absenteeism, make better use of the number of days in the school year which could improve learning outcomes, ensure

falling repetition that could reduce class sizes, and improve achievement’ (Lewin and Akyeampong, 2005:20).

These aspirations were met with a lack of school infrastructure which was mainly about the development of equitable access to education services. It related to providing incentives, provision of adequate ‘teaching and learning conditions, and this in effect linked it directly to the need for qualified teachers through out the education system’ (Pichvai, 2004:17). It also required physical investment in classrooms and schools as a significant proportion of buildings were ‘unsuitable for learning, new classrooms needed constructing, and where necessary deteriorating stock had to be replaced in order to avoid overcrowding which would have resulted in poor teaching and learning’ (Lewin and Akyeampong, 2003:20). From this perspective, teacher professional development initiatives had to be considered against the backdrop of these challenges related to access and equity in the immediate aftermath of the 1994 Genocide.

2.3: Towards Teacher Professional Development in Rwanda

From 2000, the Rwandan Ministry of Education has raised critical questions regarding the relevance of its teacher education system in terms of its nature and how it is conceptualised. Questions have been asked about the ‘processes of teaching and learning and the expected outcomes in terms of skill acquisition, relevance of its content to the learners, and the professional development of teachers’ (Rutaisire and Gahima, 2009:326). There have also been concerns regarding the provision of stimulating educational experiences at school level, the ability to encourage critical thinking in students, and the designing, planning and sequencing of appropriate learning experiences for learners.

Part of the complex equation related to the challenges of teacher professional development in Rwanda had been the ‘lack of capacity for the Ministry of Education to identify a series of incentives designed to raise teachers’ status and identity and to attract them to remain in the teaching profession’ (Rutaisire and Gahima, 2009:328). The teachers’ salaries were extremely low. In 2000, primary school teachers earned about \$40 a month which in 2011 has been raised to about \$100; while secondary school teachers earned \$ 96, and has been raised to \$240 a month. In spite of such low salaries, there were no other forms of incentives or study opportunities for teachers to

engage in professional development or join teacher training in Higher Education Institutions. There was therefore need for capacity building and teacher training was seen as Government priority.

The capacity building dilemma had been complicated by the existence of the large number of untrained, but serving teachers who are the subject of this research. This cadre of serving, but untrained teachers needed to be given priority for on-the-job training through in-service teacher professional development. These teachers needed ‘upgrading knowledge, skills and competencies focussing on learner-centred teaching pedagogies, and improving their professional qualifications at the same time’ (Government of Rwanda, 2005:7). The policy envisaged a process of promoting the professionalisation of the teaching force to contribute to the institutionalisation of the teaching profession and upgrading of teachers’ status. It was important to enhance career guidelines for teachers, provide further training for newly qualified teachers, and improve their status and identity as qualified, dedicated experts and as vital engines of nation building and development.

Table 2.4: QUALIFIED TEACHERS IN SECONDARY EDUCATION

Year	2000/01	2002/03	2008	2009	2011
Total Teachers	5,453	7,058	10,187	14,426	20,522
Teachers Qualified	2,711	3,674	5,849	8,710	13,206
% of Qualified Teachers	49.7%	52.1%	57.4%	60.4%	64.4%
Teacher / Pupil Ratio	1 :52	1 :49	1 :49	1 :40	1 :37

Source: Ministry of Education Planning Office (2011).

From 2001, the Ministry of Education had started re-organising the financing of education through a new regulatory framework that would strengthen the support given to teacher professional development. The new arrangement included a budget line for primary teacher training, lower secondary teacher training and upper secondary teacher training. This budget would also be used to support other programmes which included distance-learning and continuing professional development of teachers (Government of Rwanda, 2005). Before 2001, the Ministry of Education had operated a system with

only one budget line for ‘teacher training’ which was insufficient and lacked clarity in terms of vision, objectives and priorities. This had hindered the development of a system of professional support through professional development opportunities.

2.4: Policy development to support teaching and learning in Rwanda

An analysis of the policies in the last ten years indicates that there are factors both internal and external which influence teacher professional development. For example, teacher professional development in Rwanda has been designed in the context of the wider national educational reforms; therefore the political reform agenda has dictated teacher professional development provision. Secondly, financial considerations in terms of budget allocations have influenced delivery of teacher professional development. Thirdly, there has been some tension in terms of power relations between the Ministry of Education which allocates funds and the decentralised structures for resource control. Also, the wider systemic education reform processes have demanded the creation of new roles, and role conflict has ensued with implications for the relevance of teacher professional development. Finally, teachers’ work-loads and salaries have become important considerations in teacher professional development in recent years. Thus, there is a need to understand teaching and learning from the perspective of, and directed to teacher professional development because ‘what is taught, that is, the curriculum itself has no meaning unless teachers are able to interpret and implement it appropriately’ (Rutaisire, 2007:125). This recognises that teacher professional development impacts teaching and learning when it occurs in the school itself or is closely related to the work each teacher does in the classroom.

There is also the recognition of the importance of ‘reviewing of the school curricula and teaching methodology to make it more relevant and participatory so as to give pupils practical skills for development with particular attention given to the teaching of science and technology at all levels’ (Government of Rwanda, 2000:7); and that teachers are expected to be ‘sufficiently trained and competent to help the young people to translate theoretical knowledge into employable skills’ (p.8). This would involve training aimed at upgrading the skills of non-qualified teachers and giving new recruits effective learning. Also, it was necessary to ‘look critically at ways and means of ensuring that teacher training continues to provide a strong foundation and it remains a continuous

catalyst in responding to national challenges as they are encountered’ (Government of Rwanda, 2002, a: 5). It makes provision for teachers at all levels to be ‘given relevant teaching skills which would include the use of learner-centred teaching and learning strategies through out their professional careers’ (Government of Rwanda, 2002, a:16).

As part of the continuous endeavour to improve the quality of education, pupils were expected to acquire the skills of problem-solving which involves ‘developing the strategies that will help them to solve the problems they face in learning including skills of identifying and understanding a problem, planning ways to solve a problem, monitoring the progress in tackling the problem, and reviewing the solutions to the problem’ (Government of Rwanda, 2003, a: 5). The emphasis is on a process in which pupils and the teachers become partners in the learning process so that pupils are not just absorbers of information but use information, support learner creativity and encourage participation and team spirit, and that ‘all teachers need to be proficient in participatory teaching methods, and should be trained to identify and use the most appropriate in any given situation (Government of Rwanda, 2003, a: 6).

One of the most difficult areas to deal with in the aftermath of the 1994 Genocide was the development of the Language in Education Policy. Prior to 1994, the language of instruction at primary level was Kinyarwanda with French as a foreign language from Secondary 1 to 6. The events of 1959 and later years had caused the departure into exile of tens of thousands of Rwandans to African countries such as Uganda, Kenya, Tanzania, South Africa, Burundi, Democratic Republic of Congo, and as far afield as Europe and North America. After 1994 the Government of National Unity saw a need to provide schooling for all Rwandan children in English and French, and to create a ‘trilingual’ (Kinyarwanda, English and French) society capable of maintaining successful relations with its neighbours, and able to compete favourably for socio-economic, cultural, commercial, trade and educational opportunities in the region and beyond’ (Government of Rwanda, 2004, a: 3).

English language was recommended to be included in the existing subjects in the primary schools in Rwanda, and had to be taught at all levels. However, critics argued that with the legalisation of English alongside French, the teaching of Kinyarwanda would be marginalized in most primary schools of the country, and wondered whether all subjects in primary schools are taught in Kinyarwanda as stipulated in the policy.

Rubagumya (1994:64) argues that whereas language is supposed to help in bringing education close to the learner and therefore motivating learners to invest energy and time in the intrinsic excitement and self-regenerating dynamics of learning, ‘the lack of integration of educational goals within a cultural context admitting African languages has contributed to the present educational crisis in Rwanda in which education is geared mainly to the reproduction of the ruling elite’. Okumbe (1998) contends that African history in general is already burdened with pervasive legacies and one of them is ‘linguistic dependency in which an associated problem is self-denial, part of which is rooted in despising African languages as tribal and primitive and nothing but vernaculars’. Rubagumya (1994) maintains that our language and culture are part of whom and what we are, that by keeping our mother tongue, we preserve our culture and identity, and warns: ‘neglect your language now and a generation from now you will not even find a person with a real African name (p.46).

The Government of Rwanda reaffirmed the mother tongue (Kinyarwanda) to be the medium of instruction in the first cycle of primary school (primary 1- primary 3). From primary 4 upwards, Kinyanyarwa was to be taught as a subject with English and French as the medium of instruction. Language teaching would be conducted according to ‘communicative best practices be child-centred, participatory and interactive, be enjoyable and present language in relevant and stimulating contexts’ (Government of Rwanda, 2004, a:5). The language curriculum would support the ‘democratic and child-centred classrooms, use teaching materials that stimulate rather than demonstrate language use’; and that this would be achieved through ‘participatory learning activities such as drama, poetry, songs, language through sport, literary discussions, general debates, crossword solving and other language-based competitions’ (Government of Rwanda, 2004, a:6). This process would demand ‘teachers to be competent in the languages they teach, use appropriate teaching methodology, and to take part in regular school-based in-service teacher training in language teaching techniques’ (p.7).

Another important policy orientation concerns the development and management of teachers. There was emphasis on the need to ‘provide teachers who are trained in participatory, learner- centred and gender sensitive methods for the needs of learners at various levels of the education system, and to produce teachers who are motivated, committed and would opt to stay in the profession’ (Government of Rwanda, 2005:4).

In addition, it states that ‘a budget line has been incorporated with a separate heading for a Programme of National Continuing Professional Development of Teachers’ (p.14). This is aimed at improving the teachers’ knowledge, skills and competencies in order to improve the teaching and learning process. It states that the continuing professional development of teachers would be ‘offered through a structured programme of continuous professional development and distance learning, in which opportunities will be offered within the schools and by the teacher education institutions in order to improve teaching and learning in the classrooms’ (p.15). In this process, the Ministry of Education would adopt a competence profile to ‘incorporate learner-centred teaching approaches, planning teaching and learning competencies, classroom interaction competencies, monitoring and assessment, practical teaching competencies, and observable classroom indicators which will enhance teaching and learning in Rwandan classrooms’ (p.17).

As earlier stated, the assumption that professional development would improve the teaching and learning process, and that teaching and learning would improve with increased professional development are central to this thesis. Thus, the various Ministry of Education policies have clearly and consistently articulated the need to facilitate learner-centred and participatory teaching approaches in Rwandan schools. The purpose of this research is to explore the experiences of teachers in relation to both the theory of teacher professional development, and to these policy provisions, and the extent to which it impacts teaching and learning in Rwandan classrooms.

2.5: Partnership with Kigali Institute of Education (KIE)

Kigali Institute of Education (KIE) was established in 1996 to run a pre-service teacher education programme that provides a four-year full time residential training for teaching in secondary schools at the Advanced Level. It is the only degree level public teacher education institution in Rwanda. The pre-service training programme included teaching practice for six to seven weeks each year beginning with the third year of training. Students received two sessions of teaching practice during the course of their training amounting to fourteen weeks during the whole four years of training. In 2001, the Government concluded that the ‘residential approach was not meeting the demands of the ever expanding secondary school system’ (Government of Rwanda, 2002, a: 11).

This necessitated the Ministry of Education ‘to find an alternative mode of teacher education in the form of school-based teacher training for serving, but unqualified teachers’ (Rutaisire and Gahima, 2009:327). For this reason, the Ministry of Education commissioned Kigali Institute of Education to start a distance learning programme in 2001. However, the few studies conducted in developing countries show mixed results about the benefits of distance education, and the general complaint is that distance learning does not address practice, and that student teachers must still complete a practicum before they can graduate (Perraton (2000).

In any case the programme started as scheduled and it targeted science teachers mainly. This is an area in which the Government had identified the greatest need. The programme was designed to take two to three years for diploma, and four to five years for a degree course to complete, and the first cohort which is the focus of this study graduated in 2007. Kigali Institute of Education’s degree level curricula had to be ‘developed to make it sustainable for distance delivery to those who were aiming to become newly qualified diploma level teachers’ (Rumble, 2005:10). This was designed to be school-based with some input that would include face to face sessions during the school holidays and on weekends. It involved Advanced level secondary school leavers (S6) who were teaching in Ordinary level secondary schools mainly (S1-3).

The curriculum of the course included two science course combinations. In addition each trainee offered courses in Education (fundamental life skills for teachers, foundations of educational psychology, theory and practice of teaching, themes in educational foundations and management, introduction to educational technology, introduction to educational research and evaluation methods, and subject teaching methods). Each trainee had to complete 120 units of face-to-face instructional hours to qualify for an award of diploma in education. Initial registration and the number of teachers who registered for the cohort under the current study are shown below.

Out of the initial 500 students, 311 were science students. It was decided that the training should be accompanied by instructional materials in the form of modules, and such modules were ‘designed to be learner-friendly and supported by tutorial follow-up sessions during school holidays and weekends by lecturers’ (Government of Rwanda, 2004, b: 15). Centres were set up at regional levels where such training sessions would

take place at the end of each school term. In addition, the lecturers were to meet over the week-ends at the four regional centres to discuss teacher experiences.

Table 2.5 Kigali Institute of Education Distance Learning Science Students (2001)

Course Combination	Number of untrained teachers registered in 2001
Mathematics, Physics and Education	149
Biology, Chemistry and Education	162
French, English and Education	121
English, Literature in English and Education	68
TOTAL	500

Source: Kigali Institute of Education Planning Office (2001)

The programme emphasized ‘current pedagogical practice including mastery of subject content and the use of learner-centred teaching methods’, and that ‘locally designed self-study modules were supposed to be made available to students on the course which they would study in their schools’ (Rumble, 2005:43). The programme combined features which are normally found in both pre-service colleges of education and in-service education. The teachers were expected to study together in their respective schools and communities, and ‘examinations were offered just once a year, at four locations to which student teachers travel and stay in the accommodation currently used for residentials’ (Rumble, 2005:52).

2.6: Summary

This chapter has highlighted the context to the study, and it has shown how Rwandan educational policy has responded to the problems of creating a suitable school system in the wake of the 1994 Genocide. The policy has been one of expansion of provision and aimed at increasing the quantity of educational places available at all levels. Along side this there has been a significant emphasis on increasing the quality of teaching and learning. In all the documents reviewed in this chapter, teaching quality has been equated to the use of learner-centred and participatory methods. This is acknowledged both as a missing element in the current provision and as an essential ingredient for future improvement. However, although the various policy documents express the need for learner-centred and participatory teaching methods, the definition and understanding

of what constitutes learner-centred methods and how they might be applied in Rwandan settings is not consistently expressed in the documents reviewed.

CHAPTER 3: LITERATURE REVIEW

3.1: Introduction

This chapter analyses the theory of teacher professional development with the assumptions that teacher professional development improves the teaching and learning process, that teaching and learning improves with increased professional development, and that this impacts on teachers' professional identity. Part of the requirements of the Doctorate in Education was to carry out a '*Critical Analytical Study (CAS)*' in the second year. The literature I had reviewed for the CAS formed a basis for this thesis initially. This thesis benefits from research findings derived from both developing as well as developed country contexts. However, as I searched further and analysed the literature, it became clear to me that most international researchers on the subject of teacher professional development tended to cite and agree with each other's work with limited scope for critique within the community of researchers.

Nonetheless, the wealth of literature from the Western cultural contexts was useful for the development of my understanding of the issues and challenges in teacher professional development in general. Although relating literature on professional development derived from Western research contexts to my own particular African setting is usually problematic due to the wide cultural, social, economic and political differences, there are general issues that can shed light into aspects of professional development in developing country context. Riley (2001) argues that while professional development choices may depend on local context in terms of the development level of education system and political and cultural values, there are some core issues about professional development which transcend context.

3.2: Teacher professional development

According to Feiman-Nemser (2001:1038), professional development means 'transformations in teachers' knowledge, understandings, skills and commitments, in what they know and what they are able to do in their individual practice as well as in

their shared responsibility'. This means that we have to offer more powerful learning opportunities to teachers because 'unless teachers have access to serious and sustained learning opportunities at every stage in their career, they are unlikely to teach in ways that meet demanding new standards for student learning or to participate in finding solutions of educational problems' (p.1014).

Professional development does not follow a singular linear path, rather the conceptions of professional development are seen as multiple developing and competing models. In many developing countries, professional development has taken the form of short-term training designed and delivered by trainers who have not based this training on specific knowledge of what is happening in their trainees' classrooms and for which there is little or no classroom follow up. This sort of professional development is rarely 'designed as one part of a larger, cumulative, life-long curriculum of teacher learning, based on what is needed to keep the over all knowledge, skills and dispositions of practising teachers solidly based, up-to-date and effective, and therefore this fragmented short-term training has been shown by research to be ineffective' (Schwille and Dembele (2007:33). Another popular form of professional development is the top-down cascade model, particularly when reform efforts and donor agencies call for reaching many participants in a short time. However, this has also been deemed to be ineffective.

Schwille and Dembele (2007:108) argue that more effective models are characterised by programmes

'conducted in school settings and linked to school-wide efforts in which teachers participate as helpers to each other, and as planners with administrators of the in-service activities, emphasis on self-instruction with differentiated training opportunities, teachers in active roles, choosing goals and activities for themselves, emphasis on demonstration, supervised trials and feedback, training that is concrete and on-going over time, and ongoing assistance and support available upon request'.

In this respect, the core features of such an effective professional development programme would include focus on content knowledge, active learning, coherence, duration, form and participation.' They argue that the 'logical environment for teacher professional development is the school and the classroom, increasingly recognised as the most appropriate, indeed the only entirely suitable context for teachers' professional development' (p.103). However, organising and facilitating teacher learning on a large scale within this context remains extremely difficult and generally not entirely

successful. Villegas-Reimers (2003:70) has identified other types of teacher professional development models such as ‘professional development schools, university-school partnerships, inter-institutional collaborations, schools’ networks and distance education’, such as the one currently in use in Rwanda.

Stuart, et al., (2009) have observed that distance education, also referred to as open and distance learning is increasingly used to educate teachers in many countries, but that there is often little professional development for the staff who teach by distance. They argue that open and distance learning has often been defined by contrasting it with face-to-face classroom-based education, the key feature of distance learning being that there is some physical distance between the teacher and the students. They cite Robinson (1997:122) who defines it as ‘a teaching and learning system or process in which the teachers and learners are physically separate for some or all of the time, and when learning materials take on some of the role of the traditional teacher.’ Thus, pedagogy often becomes less teacher-centred, and more resource centred, and if these resources are well-designed, they can provide activities to help the learner make sense of the material for themselves, and so be more learner-centred’ (Stuart, et al., 2009:138). Perraton (1995:25) also defines distance learning as ‘an educational process in which a significant proportion of the teaching is conducted by someone removed in space and, or in time from the learner.’

Proponents of distance learning such as Stuart, et al., (2009) have argued that it is a useful way of educating teachers, especially as it is less disruptive to family life than a residential course, which is often an advantage to women who have young children as in many countries female teachers are less qualified than male teachers, and so they are more likely to need to upgrade their qualifications. However, there are still some unresolved issues which need to be looked at carefully such as gender and access to distance learning. Stuart, et al., (2009:142) point out that distance learning

‘can reinforce the unequal position of women in society by allowing them to study in isolation for qualifications that are sometimes seen as lower status than those given by traditional colleges and universities. ... [Also], while for some women open and distance learning offers their only chance to study, for others, it means that they have four or five ‘jobs’ to do – teacher, mother, wife, part-time farmer, and student instead of being able to concentrate on being a student by attending residential college’ (Stuart, et al., 2009:143).

In spite of these shortcomings, distance learning has remained an important medium for teacher professional development.

Villegas-Reimers (2003:12) contends that only in the last few years 'has the professional development of teachers been considered a long term process that includes regular opportunities and experiences planned systematically to promote growth and development in the profession' (see also Lieberman, 1995; McLaughlin and Zarrow, 2001; Ganser, 2002; Baker and Smith, 1999; Darling-Hammond, 1998; Guskey, 1995; Cochran-Smith and Lytle, 2001). This community of researchers advocate this new perspective which is based on constructivism rather than on a transmission-oriented model. According to this perspective, teachers are treated as active learners who are engaged in the concrete tasks of teaching, assessment, observation and reflection. It is also perceived as a long-term process that acknowledges the fact that teachers learn over time. As a result, a series of related experiences is seen to be the most effective as it allows teachers to relate prior knowledge to new experiences in which regular follow-up and support is seen as indispensable catalyst of the change process.

According to this perspective, professional development isn't better seen as a process that takes place within a particular context, which is based in schools and related to the daily activities of teachers and learners. In this way, professional development is seen as a process of 'culture building and not of mere skill training, and in which teachers are empowered as professionals, and therefore should receive the same treatment that they themselves are expected to give their students' (Villegas-Reimers, 2003:14). In professional development, a teacher is conceived of as a reflective practitioner, someone who enters the profession with a certain knowledge base, and who will acquire new knowledge and experiences based on that prior knowledge which helps teachers in building new pedagogical theories and practices, and to help them develop their expertise in the field.

Professional development has also been conceived of as a collaborative process. Even though there may be some opportunities for isolated work and reflection, most effective professional development occurs when there are meaningful interactions, not only among teachers themselves, but also between teachers, administrators, parents and other community members. There is no one form or model of professional development better than all others which can be implemented in any institution, area or context because

‘schools and educators must evaluate their needs and cultural beliefs and practices in order to decide which professional development model would be most beneficial to their particular situation’ (Villegas-Reimers, 2003:15). Thus, professional development needs to be considered within a framework of social, economic and political trend and events so that individual contexts focus on finding the optimal mix, that assortment of professional development processes and technologies that work best in a particular setting.

Whatever the setting, Cochran-Smith and Lyle (2001:47) offer three approaches of professional development. These include (a) knowledge-for-practice which assumes that university based researchers generate formal knowledge and theory for teachers to use in order to improve practice; (b) knowledge-in-practice from which some of the most essential knowledge for teaching is perceived as practical knowledge, or knowledge that is embedded in practice; (c) knowledge-of-practice whereby knowledge is not divided into formal and practical knowledge. Teachers gain knowledge for teaching when they have the opportunity to reflect on their practice and use a process of inquiry in their own environments to learn more about effective teaching. Whatever the approach, professional development has a significant positive impact on teachers’ beliefs, practices and students’ learning.

Researchers such as Douwe, et al. (2007) have highlighted the need for continuous professional development of teachers which is intended to professionalize the teaching force. However, there does not seem to be a general agreement about how serving but untrained teachers learn compared to how student teachers learn in pre-service teacher education. The challenge is that due to demands placed upon schools, teachers are expected to learn continuously. This learning can not always take place in an atmosphere of freedom, as many teachers such as those in Rwanda experience much external pressure in the way they do their work, resulting in tension between external control and personal autonomy, a tension which is accompanied by feelings that their workload has been intensified. From a professional perspective, a qualified teacher may know subject matter and pedagogy but also knows ‘how to learn and how to make decisions informed by theory and research, and also as informed by feedback from school and classroom evidence in particular contexts’ (Cochran-Smith, 2003:96). These teachers are expected to focus on teaching and learning rather than administrative tasks

and influence the development of a school culture oriented toward a focus on student learning.

It has been argued that improving professional development of teachers should not be seen as a preserve of resource rich nations of the North only, and that developing countries have potential to do so as well. Research evidence (Darling-Hammond, 1998; Avalos, 1998) suggests that teachers from developing countries need to be supported to reflect on their experiences within the context of constraints operating in their classrooms, and that teacher professional development programmes should take a more holistic stance in terms of considering limitations imposed by contextual conditions and giving more consideration to the nature of change. Shaeffer (1993) advocates an approach that recognizes the realities of the day-to-day classroom which produces motivated, professional teachers who are capable of being involved in participatory teacher training, and are more open to new ideas and amenable to trying new teaching methods in their classrooms. Bell and Gilbert (1996) contend that in developing countries, professional development may be enhanced through encompassing teacher's use of different classroom activities, the development of beliefs associated with these activities and the development of subject matter knowledge. However, experience from a number of developing countries especially in the African context shows that professional development remains a challenging undertaking.

3.3: The constructivist view of teaching and learning

Almost all curricula that are produced nowadays are based on constructivism and learner-centred education. The Rwandan policies emphasize the use of learner-centred teaching and learning in Rwandan classrooms. They focus on the need for 'the delivery of quality education in Rwanda which requires teachers who are trained, motivated, well supported, and using learner-centred interactive teaching approaches in well managed classrooms, as well as skilful assessments to facilitate learning and reduce inequities' (Government of Rwanda, 2002, a:16). There is also emphasis on 'support to the democratic approach of pupil-centred, participatory, and inclusive teaching methods' (Government of Rwanda, 2002, b: 4). In addition, government policy emphasizes improving the quality of education which demands well trained teachers who 'will ensure a complete understanding of the over all principles of the curriculum and a

detailed understanding of subject curricula' (Government of Rwanda, 2003, a:6). This focus provides for teachers who 'need up-grading knowledge, skills, and competencies focussing on learner-centred teaching pedagogies' (Government of Rwanda, 2005:7).

Learner-centred education in Rwanda was supported by Development Partners by funding the process of policy development which aimed at improving the quality of education after the 1994 Genocide. Schweisfurth (2011) cites a number of authors (Chisholm and Leyendecker, 2008; Brock, 2009; Paige et al., 2008) on the role of donor agencies in influencing and shaping policy in developing countries. However, views of this role vary, with some commentators attributing greater influence and determination to the bearers of the aid agenda than others. Whatever the impetus for this change Schweisfurth (2011:429) concludes that rarely

does policy on learner-centred education reflect joined-up thinking which takes into consideration all parts of the education system, some parts exerting more power over pedagogy than others, and teachers decision-making is informed by these influences.

Avalos (1991) argues that learner-centred pedagogy minimizes the fact-giving aspect of teaching and the students are encouraged to solve problems through their own activities, characterized by divergent thinking and problem solving. This approach is the opposite of teaching that is characterized by the use of fact-giving techniques emphasizing rote learning and minimal student activity. Hence, learner-centred pedagogy is activity oriented. The development of learner-centred teaching and learning methods is embedded in the constructivist tradition which 'emphasizes the creation of active learning environments that permit critical thinking, discovery and collaboration' (Chan and Elliot, 2004:819). Darling-Hammond (1998) has argued that developing a constructivist approach is practical, not only in the classrooms of resource-rich nations, as countries such as Guatemala and other parts of Latin America are turning teachers into facilitators rather than deliverers of knowledge.

Croft (2002:334) has questioned whether definitions of learner-centred teaching and learning unnecessarily exclude practices found in developing countries where classroom interactions may look teacher-centred to an outsider, while actually being variations of learner-centred teaching pedagogy adapted to local practices and resource realities, observing that 'definitions of learner-centred education need to acknowledge the local

nature of learner-centred education, as teachers respond to the situation of their particular learners'. The argument is that research needs to look critically at

definitions of learner-centred education developed in schools in Western cultures in order to develop a greater awareness that many indicators in current use are derived from Western notions of good practice favouring the visual and the individual, and ignoring the oral and the collective' (Croft, 2002:335).

Thus, much more qualitative research is needed to derive relevant indicators from practice in different contexts in order to accurately describe the teaching/learning process, as

'learner-centred education means that teachers are likely to develop different teaching styles in different situations, and these styles will be related to local conditions, but not completely determined by them, because teachers make choices about the way they use available resources' (Croft, 2002:335).

Learner-centred education as a complex undertaking has been illuminated by Schweisfurth (2011) who argues that all learners need to engage with, and co-construct knowledge in order to experience deep and meaningful learning, noting however, the practical difficulties in situations of limited teacher capacity, where, when teachers have no direct experienced of this kind of pedagogy and where classes are crowded and poorly equipped. In addition, a culturally nuanced perspective raises questions about 'how teaching and learning are understood in different contexts, and about whether learner-centred education is ultimately a 'western' construct inappropriate for application in all societies and classrooms' (Schweisfurth, 2011:425). In particular, the capacity of teacher is frequently cited as a problematic barrier, and this interacts with the realities of their working circumstances. However, 'teacher education is itself rarely learner-centred, and so does not provide suitable models upon which fledgling teachers can base their practice (Schweisfurth, 2011:428).

The teacher's role in the learning process is regarded as 'developmental seeking to develop pupils as learners' (Kimonen and Nevalainen, 2005:626). By engaging student teachers in dialogue about their burgeoning practice, teacher educators and researchers 'can offer a form of mentorship built on reflection while also gathering data that might inform others who will follow' (Fecho, 2000:198). This implies that 'learning and knowledge are always linked to a context in which knowledge is learned and then used' (Kimonen and Nevalainen, 2005:628), and involves reflective practice which is essential for teacher professional development.

3.3.1: Reflective practice in teaching and learning

Reflective practice is an idea derived initially from the work of Schön (1983) that has been seized upon worldwide to describe the approach of successful teachers. It requires that the teachers pay attention to daily routine and the events of a regular day, and to reflect on their meaning and effectiveness. This is based on the assumptions that teachers have commitment to serve the interests of the students ‘by reflecting on their well-being and on which aspects are most beneficial to them; a professional obligation to review one’s practice in order to improve the quality of one’s teaching; and a professional obligation to continue improving one’s practical knowledge’ (Villegas-Reimers, 2003:104). In this process, Clarke (1995) argues that the teacher is reflective when he or she is curious about, or intrigued by some aspect of the practice setting, frames that aspect in terms of the particulars of the setting, reframes that aspect in the light of past knowledge or previous experience, and develops a plan for future action.

For developing countries, a major challenge which the literature suggests is not being tackled concerns a teacher education curriculum which is based on an analysis of what schools need and what teachers need, and which deals in essentials and priorities rather than what is desirable and what is done elsewhere (Lewin and Stuart 2003). It is therefore important to maximise the benefits of learning to teach in a school-focussed context which is ‘purposefully structured to engage prospective teachers in finding practical solutions to real problems of teaching based on reflective practice’ (Akyeampong, 2003:101). Many developing nations like Rwanda are still struggling to come to terms with finding ways and means of developing a reflective pedagogy that encourages teachers to take an enquiry stance on their classrooms, so that students and teachers become an interpretive community that enquires into and reflects on both course content and pedagogy. However, more often than not, new teachers are sent into schools full of good intentions to inquire and reflect, but with little else, and frequently they find their task daunting because they ‘base their ground breaking practice on limited explorations into reflective pedagogy which often raises more questions than they divine directions to follow’ (Fecho, 2000:195).

The challenge remains in the attempts to transform the traditional school contexts which requires the teacher ‘to reflect critically on his or her own principles and practices of

action, and how such a transformation can then create a new school context' (Kimonen and Nevalainen, 2005:627). Thus, developing countries need to make efforts to conceptualise teacher training in such away that it includes professional support for teachers to sustain the positive influence of training. In the Rwandan context, this would enhance the understanding of our schools, which become increasingly refined through contact with teachers who bring different contextual experiences into the Rwandan school setting. Re-conceptualisation here would have to entail 'reflective as opposed to prescriptive experiences' which is particularly important for 'contexts where some teachers will have experienced teaching before their initial teacher training' (Akyeampong, 2003:106).

Research evidence (Douwe, et al., 2007; Meirnk, et al., 2007; Sandholtz, 2002; Cope and Stephen, 2000) make reference to the process which takes as its starting point the idea that collaboration in teacher groups may create a powerful environment for reflective learning. In this way, teachers act as reflective practitioners constantly evaluating their values and practices and using new ideas with their students in order to subject their own developing professional knowledge to rigorous questioning. This may not only help to build an effective practice and knowledge base, but may also help construct a common understanding about what constitutes effective teaching practice. This could be construed as encouraging interactive approaches in order to enhance prospective teachers' personal agency in teaching. It orients teacher professional development in such a way that 'learning experiences actively draw teacher trainees into critical dialogue and reflection with teachers and other professionals, and aims at developing in trainees 'a situated understanding of how theory can be transformed into practical knowledge for reflective classroom practice' (Akyeampong: 2003: 102).

Darling-Hammond (2000) sympathizes with this view in which the task of teaching for understanding demands far more of teachers than the traditional model because successful teachers must know how to help students access ideas in a variety of ways, without losing track of the content and pressing always for more disciplined understanding. This reinforces the idea that a teacher's ability to control and manage learning processes using strategies that promote reflective learning experiences and respect for students 'is a sign of a constructivist conception of teaching and learning, and it is a major departure from traditional teaching approaches' (Akyeampong,

2003:44). For developing countries, the major challenge lies in planning and providing a means of better understanding what new teachers imagine as well as ‘what they already know about reflective teaching and learning as they enter a teacher education programme’ (Hammerness, 2003:53).

However, research does not clarify how this long term improvement model may provide teacher educators with a foundation for helping new teachers describe and develop their professional theories, as well as bring it together in a way that links theory and practice. This challenge is further complicated by problems related to the autonomy of teachers’ professional practice, as teachers have little autonomy in their jobs, especially when compared to other professions such as medicine, and law. According to Villegas-Reimers (2003:35), teachers’ autonomy

‘can be, and is limited by the state, administrators, and principals and local communities, in which these agents are constantly determining the role of teachers, constraining the communication between teachers and parents, and even dictating the content of day-to-day classroom activities.’

The state also regularizes teachers’ activities by ‘ordering teachers to follow a prescribed curriculum prepared by specific educators, known as ‘experts’, who are not teachers themselves’, (p.35). In the process, reflective practice through professional development of teachers is unequivocally affected by the level of autonomy granted in the profession which has implications for teaching and learning.

3.3.2: Knowledge for teaching

Research by Sandholtz, (2002); Gardner (1998); Darling-Hammond (1998); Smylie, 1995) suggests that children learn in different ways and therefore require different instructional methods. The argument is that, if learners possess multiple intelligences and actively construct their own knowledge in very different ways, the learning process can hardly take a predictable course or route involving simple transmission of knowledge. Knowledge then is more individually constructed by the learner and how the process of learning occurs will depend on how the individual learners have perceived and interpreted information. This process of learning will depend on how learners acquire new knowledge by constructing it for themselves so that learning is a self-regulating process of resolving inner cognitive conflicts that often become apparent through concrete experience, collaborative discourse and reflection. In this way,

learning is not only a matter of transferring ideas from one who is knowledgeable to one who is not. Instead, learning is perceived as a personal, reflective and transformative process where ideas, experiences and points of view are integrated and knowledge is created.

Shulman (1987) proposes three main categories of teacher knowledge. The first one is content knowledge which includes knowledge of the subject matter and substantive related activities and structures, which is the knowledge of the discipline a teacher needs to teach in the classroom. Secondly, there is pedagogical knowledge, which is the knowledge of teaching methods and strategies, the learning environment, and the knowledge of learners and learning. This form of teacher knowledge involves the way the teachers think about the learning process, their beliefs, their ideas, opinions, attitudes, and experiences based on the classroom and the wider environmental interactions. Thirdly, the content knowledge, pedagogical knowledge and all these learning influences are then transformed into pedagogical content knowledge.

According to Shulman (1986:9), pedagogical content knowledge refers to a special kind of knowledge that distinguishes teachers from other experts in the same subject matter domain. It includes

for the most regularly taught topics in one's subject areas, the most useful forms of representations of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations – in a word, ways of representing and formulating the subject that make it comprehensible to others'.

Pedagogical content knowledge therefore, is that 'special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding' (Shulman, 1987: p.15). Thus, pedagogical content knowledge creates links between content knowledge (subject matter knowledge), and pedagogical knowledge (knowledge of teaching methods, approaches and strategies). It includes knowledge of the different ways in which teachers represent specific subject matter for learners and an understanding of the difficulties the learners face as a result of their existing conceptions. Shulman (1987) sees pedagogical content knowledge as the conceptual map of how to teach a subject, knowledge of instructional strategies and representations, knowledge of students' understanding and potential misunderstandings, and knowledge of curriculum and curriculum materials. It allows teachers to build

bridges between their understandings of the subject matter and the students' developing understanding, and to adapt instruction to the variations in ability and background of the students.

Ball (2000:245) illuminates this process by suggesting that pedagogical content knowledge includes knowledge of what is 'typically difficult for students, of representations that are most useful for teaching a specific idea or procedure, and of ways to develop a particular idea, for example, the ordering of decimals, or interpreting poetry, which involves thinking about advantages and disadvantages of a particular metaphor or analogy'. It is through these interactions between teachers, students, classrooms, multimedia resources and the wider community that result into knowledge construction.

Alexander et al, (2002:797) are of the view that knowledge construction 'is the process of learning that merits concern in many contemporary theories of learning and not its residual products'. This entails a complex process of tailoring the learning environment to the individual needs of the students and assisting in the shaping the minds of the individual learner through meaning-making. However, knowledge construction is either encouraged or constrained by social interaction even though the knowledge construction is processed within the mind. Park, et al., (2007:370) argue that the process of knowing involves 'agreement and interpretation with other individuals, negotiated with other members of the social context to the point that meaning is taken to be shared by interacting individuals'. Thus, the individualistic perspective of constructivism has been challenged by those advocating a more social version of constructivism.

3.4: Social Constructivism

The individualistic oriented model of constructivism has been challenged by research findings (Vavrus, 2009; Tabulawa, 2003; Brodie, et al., 2002; Guthrie, 1990) which highlight the significance of social constructivism through the design of student-centred learning environments, and the use of active, enquiry-based methods. This approach encourages teachers to view themselves as facilitators in the classroom who elicit students' knowledge, and who enable peer learning so as to disrupt the formalistic teacher-centred environments. This process involves the teaching and learning

environment in which the teachers facilitate the discovery of new information through participatory methods. Such methods include group work, problem-solving activities, and modelling various activities for different learning styles of students, and by considering their backgrounds and learning abilities.

This approach derives from the social constructivist perspective in cognitive psychology which takes into account the role of teacher-pupil interaction in the learning process, including the role for the teacher in assisting the pupils to comprehend and engage with new ideas and problems. Vygotsky (1978:86) argues that it is important to identify not just what ‘pupils have achieved, but what they might achieve, what they are now ready to achieve with the help of an adult or in some circumstances, a collaborating peer in the zone of proximal development’. The zone of proximal development has been defined as ‘the distance between what children can do by themselves and the next learning that they can be helped to achieve with competent assistance’ (Raymond, 2000:176).

This happens through ‘scaffolding’ which refers to the ‘role of teachers and others in supporting the learner’s development and providing support structures to get to that next stage or level’ (Raymond, 2000: 176). Vygotsky’s socio-cultural theory proposes that social interaction plays a fundamental role in the development of cognition and that ‘learning occurs through participation in social or culturally embedded experiences’ (Raymond, 2000:176). The learner does not learn in isolation, instead learning is strongly influenced by social interactions which take place in meaningful contexts in which children’s social interaction with more knowledgeable or capable others and their environment significantly impacts their ways of thinking and interpreting situations. In this way, a child develops his or her intellect through internalizing concepts based on his or her own interpretation of an activity that occurs in a social setting, and it is the communication that occurs in this setting with more knowledgeable or capable others such as parents, teachers and peers, that helps the child construct an understanding of the concept (Bransford, Brown, & Cocking, 2000). Thus, not only does social constructivism take into account the social and cultural experiences of the pupils in the teaching and learning process, but learning itself is seen as essentially social.

Vavrus (2009:304) working in Tanzania points to a process in which ‘teachers are increasingly required to employ social constructivist teaching approaches, a shift in the teaching and learning paradigm that will require that teachers learn a much more complex and varied repertoire of teaching skills than has been necessary in the past’. However, there is no common agreement on this approach either.

Mtika and Gates (2010) observe that the notion of learner-centred education has assumed a positive policy position for teaching and learning in both primary and secondary sectors not only in Malawi, but also in the wider world, but there is no clear evidence on the extent to which trainee teachers, or indeed qualified teachers develop and utilise learner-centred education during their classroom pedagogical practices; and they argue that the appropriation and adaptation of a pedagogical theory involves adopting tools for thinking that are made available by various social agents, structures and systems within cultural learning settings. They conclude that appropriation and application of learner-centred education is constrained by various factors which indicate that progressive pedagogical notions aligned with social constructivism promoted in teacher education institutions have not resulted in widespread change in classroom practice.

According to Dembélé and Miaro (2003), ‘attempts to institutionalise child-centred pedagogy both in schools and teacher education institutions have produced inconclusive results so far’. Tabulawa (2003) contends that the inconclusive results have always been rationalised in simplistic, technicist terms such as lack of resources, or poorly trained teachers, while the real explanatory factors have to do with teachers’ assumptions about the nature of knowledge and how it ought to be transmitted, their perception of students, and what they consider to be the goal of schooling, and that students’ epistemological assumptions as well as social factors such as authoritarian

ism inherent in Tswana society must also be factored in. Tabulawa (2003) argues that the teachers’ and students’ assumptions are incongruent with the basic tenets of child-centred pedagogy, taking them for granted when affecting change in classroom practices can lead to disappointing results. Dembélé and Miaro (2003:20) come to the conclusion that ‘breaking the mould of traditional teaching to embrace and practice open-ended instructional approaches is extremely difficult for teachers because it requires changing

deeply rooted beliefs and knowledge, the teaching and learning process, learners and the purpose of schooling’.

Tabulawa (2003) comes to the conclusion that social constructivism promotes the neo-liberal vision of democracy in which schools are expected to be democratic communities of learners and their teachers are to acquire those qualities of mind and social attitudes which are the prerequisites of a genuinely democratic society. In this way, Tabulawa (2003:18) argues that ‘because it is more democratic than authoritarian teaching, learner centred pedagogy emerges as the natural choice for the cultivation and inculcation of a liberal democratic ethos’. From this perspective, the growing interest among international development agencies for social constructivism would be seen to take a political rather than a solely educational rationale. The argument is that students are not necessarily passive in teacher-centred classes, and one wonders whether student-centred methods make sense in developing countries where very different models of student-teacher interaction prevail, or whether student learning can be improved without greatly improving the material infrastructure of education in those countries (Guthrie, 1990; O’ Sullivan, 2004; Barrett, 2007). This perspective recognises that even in one developing country context, the quality of teaching can vary so much in different schools and classrooms, even though teachers may generally rely on the same set of formalistic teaching methods.

In developing countries, many of the approaches taken to teacher development are failing to deal with the complexity of teachers’ knowledge, work and identity, and lack sufficient grasp of the nature of change processes, and the way that these are mediated by cultural, political, and economic environments. Vavrus (2003) argues that although there may be commonalities in values regarding intergenerational relations of authority, didactic teaching methods do not translate into identical classroom practice across a continent as diverse as Africa for example, but that there are similar contours in the cultural environment in which schools and teacher colleges are situated. Thus, ‘excellent teaching is not universally equated with social constructivism and cannot be measured using a single global standard, because the cultural traditions and the material conditions of teaching vary considerably around the world’ (Vavrus, 2003:305). Without recognising these multiple forces affecting teachers’ practice in Africa, efforts to reform schooling along strict social constructivist lines is unlikely to have much of an

impact. Instead, Vavrus (2003) puts forward the concept of ‘contingent constructivism’ which would broaden the range of pedagogical practices within distinctly teacher-centred classrooms.

According to this perspective, the constructivist pedagogy is contingent upon a number of factors so much so that even when one has embraced its philosophy, teachers need to be rewarded, not admonished for recognising the limitations of its attendant methods when conditions do not warrant their use. Vavrus (2003) argues that this demands respect for students’ knowledge and infusing critical thinking skills into the question and answer technique, even though there may be no obvious demonstration of student-centred teaching. This suggests that ‘a broad range of pedagogical alternatives for demonstrating excellent teaching should be recognised in teacher education programmes and policies’ (p.310). Thus, teachers in developing countries, particularly in Africa, need to be able to adopt and domesticate progressive ideas into their notion of participation and relate them to African pedagogical tradition.

This approach is quite relevant especially for teachers with large classes such as in Rwanda, and the possibility for incorporating into it elements from more student-centred traditions. For this to happen, the heterogeneity of teachers and classroom contexts accordingly requires curriculum and implementation to be flexible enough to adapt to new structures, curriculum approaches and contexts. This significantly influences implementation, and ‘the question to ask is not, how can we improve the quality of teaching by promoting alternatives to formalism, but how can we improve the quality of formalism?’ (Vavrus, 2003:310). Therefore it is not formalism or constructivism that should be promoted through teacher education; rather, ‘what is needed is a contingent pedagogy that adapts to the material conditions of teaching, the local traditions of teaching, and the cultural politics of teaching in Africa and beyond’ (p.310). In fact, experiences from Africa indicate that although learner-centred pedagogy remains a challenge, it is not an impossible undertaking.

3.5: Assessment for learning and teaching

Learner-centred teaching and learning demand an ‘assessment for learning’ which is a concept currently debated by educationists and researchers round the world. Proponents of this concept (Hargreaves, 2005; Watkins, 2005; Black, et al, 2003; Dann, 2002;

Askew and Lodge, 2000; Torrance and Pryor, 1998; Gipps, 1994) argue that formative assessment monitors pupils' performance, informs the next step in teaching and about children's learning, gives feedback for improvement and brings pupils to take control of their own learning by way of fruitful feedback, dialogue and exchange of views among peers and for individual self assessment. Stobart and Gipps (1997:19) have argued that formative assessment aims to promote learning, whereas summative assessment doesn't necessarily contribute to learning. They contend that teaching for tests encourages rote learning, thereby negatively influencing students' self-esteem and has a detrimental effect on learning, and that 'the key difference between formative and summative assessment is not timing, but purpose and effect.' Thus, formative assessment is viewed as learning about learning.

Building on that tradition, Black (1999:118) argues that the function of 'assessment that is directly concerned with learning is the formative function and use of evidence for the guidance of learning, mainly in day to day classroom practice'. However, Torrance and Pryor (1998:157) caution that formative assessment is only effective when the conceptual emphasis of learning shifts from the curriculum to the learner, and the construction of knowledge incorporates an interactive multi-perspective, acknowledging the social dimension of assessment, and that 'collaborative interaction of this nature involves a process of group reflection which in a very real sense actually creates the zone of proximal development as well as allowing individuals to explore and extend it for themselves.' This means that the development of the learner results from social interactions and is enhanced by the guidance of others in the social interaction process.

Formative assessment stems from the constructive and co-constructive views of learning, and is supported by a two-way interaction between teacher and student to support learning. Watkins (2003) identifies three views of learning, namely, that learning is being taught, learning is individual sense making, and that learning is building knowledge as part of doing things with others. This implies active rather than passive learning. It means that learners engage in collaborative argumentation and knowledge testing, and in the process learning becomes part of a community (see also Lave and Wenger (1990), Wenger (1998), Wubbels (2007). In this way, 'opportunities for learners are created to reveal their own understanding of the criteria for success and then to improve' (Black et al., (2003:65). However, Gipps (1994:137) cautions here that

formative assessment should 'involve feedback to the pupil, her involvement in and understanding of this feedback is crucial otherwise improvement is unlikely to occur'. Hargreaves, (2005:220) sees assessment for learning as 'teachers learning about children's learning, and children taking some control of their own learning and assessment'; and in this sense learning is viewed as building knowledge as part of 'doing things with others which draws attention to the process through which learners act as partners, communicate in relation to their activity, involve themselves in dialogue, and create a joint product which is more than the sum of the parts' (p.220).

Several things are accomplished in the process of formative assessment and these include identification of strengths and weaknesses of students for building on strengths, plan remedial sessions for weak students, and adjusting the teaching methodology to improve learning in general, provide feedback to teachers and students to close the gap between the attained and desired targets. This involves 'reflection on the process of learning which is believed to be an essential ingredient of effective learning' (Watkins, 2003:6). For this reason, assessment should be 'instructive, transparent, fair, prompt, challenging, empowering, task-oriented, specific, achievable, and with clear criteria (Race, et al, 2005:2). In this way, the teacher is guided on the next course of action, providing motivation to students, estimating potential for future performance, and provision of statistics for internal use by the schools to find out whether they are accomplishing their objectives.

Formative assessment encourages a process of learning in which knowledge is conceptualized not as 'out there', waiting to be discovered, but rather through each learner struggling to make sense of his or her own experiences. However, Askew and Lodge (2000:12) caution that in the United Kingdom, for example, 'it is difficult to conceive of this model being adopted in classrooms within the current UK educational climate since the autonomy of teachers and educational establishments has been reduced and they are faced with increasing direction on what and how to teach'. In developing countries this situation is even more pronounced and more challenging for the teachers as the school is often seen as a place where 'learning becomes problematic, where it is assumed that it is something that kids only do under coercion' (Eckert, et al., (1996:4). Thus, the idea of reflection in schools seems to be a difficult undertaking, and as Watkins (2005) has observed, 'to attend to one's learning, one needs to occasionally

stop the flow to notice, and cumulatively, build up a language for noticing more'. This is not as easy as it sounds since 'it involves a shift in power between teacher and student, so that the teacher becomes in a sense also a learner, yet this shift in power that is engendered in this process of change can be quite problematic' (Black, et al, 2003:81). Whatever the issues are with formative assessment, it is widely viewed as more beneficial to the teaching and learning process compared with summative assessment.

3.6: Way forward for learner-centred teaching and learning in African classrooms

3.6.1: The case of Lesotho

The introduction of learner-centred teaching and learning in the African classrooms has been rather difficult, but it is not totally impossible. In the Lesotho context, according to Stuart (1991), the introduction of a curriculum that focussed on student-centred, activity-based teaching methods was not at first widely accepted by teachers. Teacher educators, teachers and students alike seemed unclear about the feasibility and effectiveness of such methods. The primary reason why teachers avoided such approaches was a lack of role models and opportunity to see or experiment with alternatives in a supportive atmosphere. Other factors were lack of confidence in the subject matter, and lack of time or opportunity to think through what they were learning and reflect on the practice of particular values and theories. Teachers were then allowed to select the aspects of teaching that they were to target as well as their preferred solutions. They identified the problems, ensured appropriate planning, reviewed activities, carried out systematic observations and evaluated outcomes.

According to Stuart (1991), there was evidence that teachers' methods shifted away from transmission modes to more student-centred activities that worked in spite of overcrowded classrooms and lack of resources. Importantly, the process enabled teachers to develop the ability to frame problems, share ideas and try out new approaches and to evaluate their own practice. This might have 'enabled them to learn from experience which is consistent with the situational nature of professional knowledge' (Avalos and Aylwin, 2006:526). Stuart claims that over the course of the study, teachers may more readily acknowledge their students' potential for using higher

order cognitive skills. Thus, when teachers learn collaboratively in communities, they tend to experiment with new teaching methods, may feel insecure and therefore seek confirmation from their colleagues. This model promotes a process in which teachers filter their experiences throughout their personal practical knowledge and connect teachers' personal knowledge with the contexts of teaching.

In spite of the relative potential for success, Lefoka and Sebatane (2003) found this phenomenon quite a challenge in the Lesotho teacher education system. They claim to have found in their research a gap between the rhetoric and the practice because both the aims of the curriculum and the expressed views of the tutors indicate a learner-centred approach; but they found little evidence from the study that tutors were getting to the level of the students, taking account of the individual differences, or perhaps those with difficulties. The study concluded that students were not 'learning how to solve problems or to become creative and reflective practitioners as set out in the programme aims' (p.45).

3.6.2: Teacher training for secondary school science teaching in Malawi

In the Malawi context, a tailor-made curriculum was developed for a teacher training programme which among other things aimed to 'teach methodology courses whose emphasis is on student-centred approaches without confining the teaching to the laboratory' (Saiti, 2007:4). The programme also emphasized the use of cooperative learning to empower learners to lead themselves through course content and materials. Students were to use continuous assessment to evaluate a large number of capabilities, skills and areas of content. Saiti (2007) points out that at the start of the course, the student teachers' knowledge was narrow, that they had not been able to read beyond the basic recommended texts, they had difficulty in grasping the basic concepts, and that 'when they showed that they had understood the meaning of a hypothesis, they failed to differentiate between different kinds of variables when carrying out a written exercise' (p.5). Besides, the student teachers also 'had difficulty with understanding both spoken and written English which impacted their ability to understand questions and apply knowledge' (p.6).

In spite of this, Saiti (2007:8) claims that over time, there had been 'noticeable changes in pedagogical skills of the student teachers especially in their use of pupil-centred

methodologies, and their confidence in handling content, and in doing experiments and field work'. On the other hand, although the student teachers had been aware of the strengths of using pupil-centred teaching, 'they believed that these teaching strategies were only appropriate for primary school', and felt that 'secondary school students appreciate more serious teaching methods like lecture and other passive techniques' (p.10). Nonetheless, Saiti (2007:11) claims that when teachers' content knowledge of the subject is extremely low and their method of teaching very traditionally authoritarian, 'a short spell of exposure to a higher level of thinking with hands-on experience of learner-centred teaching methods does have a dramatic effect'. Thus, by improving the knowledge and pedagogical skills of a few very weak teachers in many schools, pupils in a wide area benefit from teachers with a broad understanding of their subject and the ability to inspire them.

3.6.3: The Primary School Science Programme in South Africa

In South Africa, Harvey (1999) researched a programme in which teachers were engaged over a protracted period in acquiring a large body of complex knowledge and skills including subject knowledge, practical competence with experiments, pedagogical skills, language skills, classroom management skills, and apparatus management skills. These skills were required to be integrated creatively into everyday practice of the teachers. This required support in terms of demonstration lessons, sharing responsibility in team teaching, and assuming increasing control over classroom practice. This was an attempt to 'move teachers away from formal teaching styles which equates science education with activity-based and experiential learning typical of many African countries' (Harvey, 1999:599). In this process, the level of the general education of teachers, and the amount and kind of training they had received were identified as major influential factors influencing teachers' ability to use learner-centred teaching methods. Equally important was the issue of language development.

In the South African context, Harvey (1999:601) argues that during classroom observations, pupil's language competence emerged as the most important factor determining teaching style, and that 'if the underdevelopment of the medium of instruction is indeed the most important factor limiting development in teaching style of science, then science teaching should focus squarely on this problem'. The study further

highlights the importance of building confidence in subject knowledge and technical proficiency with apparatus and modelling activity-based learning, provision of concrete models of practice in the form of demonstration lessons, and the modelling of the use of language development activities, especially improved use of existing print material. However, there are ‘a myriad of factors at play affecting whether South African student teachers utilize only the forms (techniques and methods) of learner-centred pedagogy, or also its substance, that is, engaging with student’s ideas and understandings’ (Vavrus, 2003:310). In this context, Harvey (1999) concludes that the teachers who ‘use only the ‘forms’ work with limited resources, while those who engaged with its ‘substance’ were often teaching in schools where learner-centred practices were already supported’ (p.310). Thus, learner-centred pedagogies in Africa remain a challenge.

3.6.4: The experience of the teaching materials project in Kenya

Ndirangu, et al, (2003) describe an experience in Kenya in which a Teaching Materials Project was undertaken in the context of Teaching Practice by Egerton University (B.Ed) science students. The project was intended to provide science teaching aids where they do not exist in schools. This was designed to enhance learner-centred teaching methods whereby in the process of the project implementation, emphasis was laid on the creative use of locally available resources to develop low cost useable teaching materials. Scrap timber from the school workshop, stones from a local quarry or river bed, cement mixed with sand and water to make concrete, were creatively used in the production of teaching aids. Ndirangu, et al (2003:76) found that in the biology lessons, by ‘involving learners in the collection and classification of plants and animals, breeding rabbits, rats and fish to provide living matter for biology lessons for example, this provided excellent opportunities for active learning.’ They argued that visual medium as typified by these different teaching and learning materials was very important in making science easier to understand, and that the imagery promotes a greater involvement in recognition of tasks than other forms of representation. This reflects a need for the enhancement of learner-centred teaching methods in which teachers use visual examples like real things, models or still pictures to avoid theoretical approach which makes science difficult to understand. For effective mastery of skills and concepts in science, practical experience is essential, therefore ‘instructional settings which emphasize practical work enable learners to do science rather than learn

about it, and for this reason the application of instructional aids is important if effective learning is to take place' (Ndirangu, et al, 2003:79).

The project had measured the science materials against three sets of criteria, namely; the ability of the prepared learning materials to model concepts correctly for easier understanding, the adequacy of the subject content, and the correctness of the subject content. Ndirangu, et al (2003:82) , claim that the 'graduate teachers who had undertaken the Teaching Practice Project Materials produced learning resources regularly in their teaching career', and that 'of those who habitually developed teaching aids, 82% indicated that other teachers borrowed what they produced for use in their classes'. The study concluded that to promote learner-centred teaching methods, science teachers need to use local adaptations where possible to concretise scientific principles. Thus, improvised science teaching materials and equipment would appear to be amiable alternative in these instances as long as teachers were provided with skills to do so. However, Ndirangu, et al, (2003:82) observed that teachers were able to 'transfer into their practice the idea of improvisation of science teaching materials using locally available resources', but that 'for a majority of those who prepared the teaching aids, this appeared to be an individual teacher's own initiative rather than being a requirement of, or encouragement of the school'.

3.6.5: implications for Rwanda

From the forgoing, it is clear that developing learner-centred teaching and learning particularly of school science in Africa remains a challenge. Jegede (1997) sees the challenge in social-cultural terms. He argues that one's

culture programmes a person's thoughts, feelings and actions which however is not recognized in educational learning', and that 'cognitive activity in school and outside is inseparable from its cultural milieu and school learning and performance are influenced by complex social, economic, historical and cultural factors (p.8).

For example, most African children hardly display the urge to ask questions in class, and when forced to voice their opinions, some believe science has very little relationship with their own real world. Jegede (1997:15) concludes that in Africa, there is a conflict of conceptual and instructional models between the school and the traditional society, an active interplay of socio-cultural variables in the teaching and

learning of science, and that ‘the science learned at school has little bearing on what goes on in the lives of individuals who emphasize human interactivity and communal living’. This suggests that restructuring science education in Africa using familiar materials and processes in which the learner lives and operates is imperative. The African examples cited in this section indicate that although learner-centred pedagogy has been tried with varying levels of success, these methods were in the repertoire of teachers but were rarely used because they were not encouraged by the environment and by accepted practice. It is therefore important that educators in the African context consider the cultural, social, economic and political milieu into which learner-centred pedagogy is being introduced before designing teacher professional development programmes.

There are specific lessons from other contexts that Rwanda can learn from as we develop our own teacher professional development programme. In addition to the African cases already cited in the preceding sections of this chapter, Schweisfurth (2011:425) reviewed 72 articles on the subject which offer some insights which are quite relevant. The issues of ‘teachers’ capacities, classroom resources which are low, the pupil/teacher ratios which are high, all complicated by a culturally nuanced perspective which raises questions about how teaching and learning are understood in different contexts, and about whether learner-centred education is ultimately a ‘western’ construct inappropriate for application in all societies and classroom’, are of worthy of note those involved in designing, planning and implementing teacher professional development programmes in Rwanda.

O’Sullivan (2010) conducted a case study in Uganda which offers interesting insights. By preparing teacher educators for their roles and tasks, issues of relevance are raised including those concerning knowledge, roles and tasks of teacher educators, the critical role of pedagogical knowledge in teacher education programmes which tend to focus on content knowledge, the importance of context, specifically the usefulness of a contextual teaching and learning conceptualisation of quality, the key roles of supervisors and mentors, the importance of research and reflective practice, and the capacity of the ‘educators of educators of teacher educators’(p.378). Also noteworthy is the importance of using a variety of assessment methods.

In Namibia, (O'Sullivan, 2002) raises similar issues concerning teacher educators who use lecture methods to train student primary teachers to implement child-centred methods, and argues that student teachers are thus not provided with any opportunity to develop their pedagogical skills in using a variety of child-centred methods, concluding that failure to use methods other than rote learning provides an explanation for the failure of qualified Namibian primary teachers to implement child-centred methods in their teaching.

Dahlstrom (1997) also highlights issues of interest in Namibia in which a critical pedagogy was intended to encourage an understanding of the relations between ideology, power, and culture in the society at large as well as in the classroom, and to create more participatory practices within the formal school system. In this process, learner-centred education was concerned with focussing attention on the background, interests, and orientation of the students. The influences of policy formulation, conceptualisation, and implementation on the programme are note of worth. Zeichner (1997:36) notes in the Namibian case that because of the

newness of the concept of learner-centred and democratic education which starts with the background and experience of the learners and involves a more interactive pedagogy in which learners are encouraged to express their ideas and opinions, it is not surprising that many of the studies done so far address the difficulties that teacher educators were facing in managing the shift to a more participatory form of teaching and learning.'

These issues are important for the Rwandan teacher education in general, and specifically, for the teacher professional development programme. As Uworwabayeho (2009:319) notes in regard to Rwanda, 'technology is still mainly used to support the teaching, rather than the learning which remains a fundamentally teacher-centred conception.' Thus, the experiences cited from other developing countries, particularly from sub-Saharan Africa are of particular relevance and are quite instructive. However, questions remain unanswered about whether these imposed or imported western concepts of liberal education are relevant to Rwanda. Also, some of the issues raised about authoritarian school regimes in especially Africa (Tabulawa, 1997; 2003), and whether this school environment is limited to Africa, are debatable and subject to further research.

3.7: Developing a community of practice

In Rwanda like many other developing nations, the challenge in teacher professional development lies in how to get teaching to provide an opportunity for teachers which may help foster schools in which ‘teachers examine their own experiences in light of educational theory while working within a professional community to improve the school culture’ (Kahne and Westheimer, 2000:381). The concept of ‘community of practice’ has its roots in the apprenticeship model of learning (Lave, 1991) and later moved away from this to a certain extent in Wenger’s later work (1998). Lave (1996) argues that learning as it normally occurs is a function of the activity, context and culture in which it occurs, and therefore it is situated learning which implies a community of practice and not an individual enterprise, and that it is learning that is culturally shaped as people develop their understandings of any enterprise from their participation in the community of practice within which that enterprise is practiced.

According to Wenger (1998), when specific communities engage in a common activity with a common interest, it leads to active involvement and participation by the members of the practising community, and in the process, a community of practice is developed. It is in fact, a result of a lived experience through this interaction and engagement. In the process, members of the community gain more experience and competence and begin to associate themselves with the community. Wenger (1998) argued that educators are members of different communities of practice which may be more or less significant since they engage in different practices, and that teachers also gain different perspectives, and do ongoing work as reconciliation across these communities of practice. In this context the community of practice might refer to traditions of teacher practice or professional practice. This may not be necessarily good or bad from the often unsaid ways that people engage in their work in particular institutional or national contexts. According to Wubbels (2007:226), a community of practice refers to the process of social learning that occurs when ‘people who have a common interest in some subject or problem collaborate over an extended period to share ideas, find solutions and build innovations’.

Such enterprise should be located within the school workplace, ‘offering the possibility of individual transformation as well as the transformation of the social settings within

which individuals work' (Grossman, et al, 2001:948). Clayton and Schoonmaker (2007) have observed that unfortunately, the lack of attention to teacher development within the community of the profession and, no less the school is pervasive in both policy and practice. However, this process seems to be quite complicated. For example, in an assessment of what images and experiences of teachers, teaching and teacher training beginning teachers bring, Akyeampong (2003) observes that in Ghana, beginning teachers came with positive expectations of themselves as to what they believe they can achieve as teachers in terms of improving academic performance of slow learners, teaching all age groups and teaching pupils facts. He laments this dominant view about 'teaching facts' which as he sees it, presents a clear challenge to teacher training and thus the need to 'replace it with a more interactive and cooperative understanding of teaching and learning' (p.41). This may imply a constructive approach to teaching and learning which 'involves instruction based on 'learner-centered principles and provides opportunities for learners to draw on their own experiences and interpretations of the learning process' (Schuh, 2004:835).

3.8: Developing professional identity

According to Welmond (2002:42), 'teacher identity refers to both the personal experience and role of teachers in a given society.' It includes both the subjective sense of individuals who engage in the occupation of teaching and how others view teachers. Welmond (2002) argues that because these different views of the responsibilities and rights of teachers are often linked to, or fuelled by competing interests and ideologies, as well as changing circumstances, teacher identity is dynamic and contested. It is the product of competing conceptions of the rights and responsibilities of teachers, and of different ways of understanding success or effectiveness. These competing perspectives of teacher identity are more or less coherent and more or less shared, but teacher identity is not the same across societies.

The process of building a professional identity as an ongoing process of interpretation and re-interpretation of experience is a 'complex process and occurs over time, often cyclically with heights and lows but it involves decision and commitment to pursue its path' (Avalos and Aylwin, 2006:525). Research findings (Kagan, 1992; Shaeffer, 1993; Tobin, 1996) indicate that teachers develop their professional identity through their

beliefs and concepts about teaching over years of being students themselves, and from their own experiences as teachers. Akyeampong (2003) observes that it is important to analyse how teacher education pedagogy could use some of the images from stakeholder experiences to foster a discourse of learning to teach which trainees could easily recognise and identify with, and how such positive images could be used to develop a conception of teacher identities.

Research evidence (Smith and McLay, 2007; Mead, 2007) suggests that policy and practice of teacher education improvement of the knowledge base and the personal development of new teachers have sometimes been seen in opposition rather than complementary. This was because the view of knowledge was disembodied, emphasizing its acquisition and assessment, yet building and using such a knowledge repertoire occurs along with the marshalling of other sorts of knowledge and experience by the students as they are constructing their identities of themselves as teachers. Thus, understanding teacher professional identity is a very complex process.

According to Wenger (1998:154), professional identities are not necessarily stable and coherent, but multiple, fragmented and prone to change, constructed over time in a continuous motion, one that has a momentum of its own in addition to a field of influences'. This presents a picture of identity construction as a continuing 'becoming'. Research evidence (Hammerness, 2003; Ben-Peretz, 2001) has illuminated this process which demands enabling teacher educators to design their curriculum to begin with their students' current understandings, that is, to start where teachers are. This has implicit challenges associated with uncovering teachers' knowledge and beliefs which can have a profound impact on how and what teachers learn. The argument is that teacher development programmes must elicit teachers' current knowledge to confront contradictions, challenge assumptions and deepen knowledge, in turn laying the ground for more complex personal and theory-based professional knowledge. Such a process helps teacher educators to develop a powerful new means to surface the insights that drive teachers' work.

Visual images of teachers and teaching can be a particularly useful means of promoting the articulation and discussion of assumptions and beliefs about teaching and learning. Teachers need to examine challenges and articulate their beliefs and assumptions through the sharing of visions which might enhance their professional identity. Thus,

Rwandan teacher educational institutions might learn to develop and act in a proactive manner. This implies that a new model of teaching and learning in Rwanda is needed which encourages both teacher educators and learners to develop essential learning skills in order to be able to construct their own future.

3.9: Summary

The aim of this research is to capture the experiences of the recently graduated secondary school teachers about their training and the influence it might have had on their professional identity. In Rwanda, there have been concerns regarding the provision of stimulating educational experiences at school level, the ability to encourage reflective and critical thinking; and designing, planning and sequencing of appropriate learning experiences for learners. Teacher professional development is a complex process. However, little research has been conducted on different social and cultural contexts, and limited published research on the Rwandan context. This has motivated me to undertake this research which is investigated through the following research questions:

- (a) How do Rwandan teachers understand and experience their in-service training?
- (b) To what extent does the Rwandan in-service teacher professional development programme use and promote learner-centred teaching and learning methods?
- (c) What effect does the Rwandan in-service programme have on the teachers' professional identity?

The results of this study are intended to illuminate the understanding of the experiences of the recently graduated teachers, whether their training made any difference in terms of its influence on their teaching and learning and their professional identity. As a member of Senior Management of the Ministry of Education, my interest was mainly in improving the training programme in order to improve classroom practice. The experiences of the recently graduated teachers are intended to help various stakeholders in gaining insights into teacher professional development in Rwanda and influence future training programmes for future generations.

CHAPTER 4: METHODOLOGY, DATA COLLECTION AND ANALYSIS

4.1: Introduction

Chapter 3 explored relevant literature to illuminate the various theoretical aspects of teacher professional development as a basis for the identification of research questions for this study. This enabled me to make a transition into the understanding of the nature of data I needed to collect and from whom. In this chapter I deal with my research journey in terms of methodology, data collection and analysis.

4.2: Methodology and methods

This research is based on qualitative methodology because I needed to understand teachers' experiences and opinions of their training programme, and so I was interested in what they had to say. According to Sarantos (1998), methodology translates the principles of a paradigm into a research language and shows how the world can be explained, handled, or studied; and that there are philosophical differences between qualitative and quantitative approaches which display various qualities and characteristics and use different techniques and strategies. This research as can be seen from the research questions was not interested in generalisation, prediction and control, but with interpretation, meaning and illumination. It recognises that as individuals, the teachers create flexible systems of meaning which they then used in social interactions and in making sense of, and for their lives (Usher, 1996). This entails subjective reality since the principal concern is the understanding of the way in which the individual creates, modifies and interprets the world in which he or she finds himself or herself (Denzin and Lincoln, 1998). The process of social interaction with the teachers was essential for purposes of broadening the scope of my practical knowledge from the perspective of their experiences. Thus, individuals create flexible systems of meaning which they then use in social interaction and in making sense of and for their lives, which implies that an explanation of social reality based on interpretive traditions is more than telling examples but gives contrasting views as well (Usher, 1996).

My own theoretical stance which is embedded in this tradition focussed on questions that allowed for provision of reasons. Such questions imply methodological, epistemological and ontological perspectives which are related, since claims about what exists in the world imply claims about how what exists may be known (Usher, 1996). With that understanding, I did not attempt to capture 'objective truth' as I was interested in stories being told by the teachers. The purpose was to give them voice because their experiences which include issues of classroom practice such as the use of learner-centred teaching and learning approaches and those of professional identity, the way it is developed, changed and deployed is relevant to the theory of teacher professional development. However, within this process, I recognise the impossibility of directly capturing the teachers' understandings as they are mediated by my own understanding, and further complicated by my position.

My understanding is central to representations of the social with in my research writing, thus my identity was critical to the production of knowledge about the complexities of the social world. This means that my interest and position, 'although informed by theoretical disciplinary or professional knowledge, mediates the link between the methodology and the substantive concerns' (Dunne, et al., 2005:29). This realisation enabled me to be self-conscious about my position in the Ministry of Education as a senior member of the management team, and in the research from the outset, 'the focus and design of the research during the process of data collection, in making interpretations, and in the writing' (Dunne, et al., 2005:32).

The main method used in this study was the use of interviews complemented by classroom observations. Combining interviews and observation data provided an opportunity to identify professional issues during classroom observation and then follow them up for discussion during the interview and vice-versa. For example on my interview schedule, questions seven and eight refer to my classroom observation as follows: Question (7): How much of what I observed today has been influenced by your training? Question (8): What other aspects of your practice as a teacher, that is, things I did not see today have changed as a result of your training? This approach was intended to raise questions of what the teachers' thought was relevant for their own training.

4.3: Data collection and sample

I was aware of the debate about sample sizes and generalisations that might result from such samples (Silverman, 2007; Bell, 2006; Bryman, 2004; Warren, 2002; Gerson and Horowitz, 2002). However, I was convinced that a sample that is able to support convincing conclusions is likely to vary somewhat from situation to situation. What was important for me was to be able in the end to justify my sample size. The nature of the study based on the research questions did not require generalisations as they sought teachers' opinions about their training experiences. I was interested more in depth and immediacy rather than representativeness. My concern was to give voice to the teachers in order to explore more about the assumptions inherent in the theory of teacher professional development. For purposes of this research, the sample comprised twelve recently graduated teachers with different working experiences and environments. This is a group of individuals who had previously been in a category referred to as 'serving, but unqualified teachers'.

Selection of schools was done by district authorities. I first had to find out which schools had participated in the programme, and how many teachers per school in order to ascertain that I would get enough participants. Eventually I selected three schools which seemed to have had a good number of participants - one urban, one semi-urban and one rural. I gave them all pseudonyms to ensure anonymity and confidentiality. I selected one school from the City of Kigali and named it Kigali Modern School. The second school is a semi-urban school in the Eastern part of the country. I named it East Highlands College. The third school is located in the rural Northern part of the country. I called it New Rwanda High School.

Like many boarding schools in post-independence Rwanda, the three schools are relatively large with about 1000 students who come from different parts of the country because they have boarding facilities. Most of these boarding schools which are spread all over the country were established by missionaries during colonial rule, and were later taken up by Government after independence. The Government provides curriculum, text books, and pays teachers, while the Catholic or Protestant missions take care of the management of the schools. They are referred to as 'Libre Subsidie' or Government aided. In terms of teacher postings, although most teachers would prefer to

work in urban areas, many are happy to teach in these rural boarding schools because they usually have housing and other facilities regardless of their geographical location. This was the pattern of secondary schools in Rwanda until the recent introduction of the fee free and compulsory Nine Year Basic Education Programme in 2009 (Grades 1–9, of which six years are primary schooling, and three years are lower secondary or Ordinary level); and subsequently, the Twelve Year Basic Education Programme just introduced in January 2012 (Grades 1-12, of which six years are primary, three years are lower secondary, and the other three years are upper secondary or Advanced level). The new school arrangement focuses on the construction of day community secondary schools in which students live in their homes, but travel a distance of not more than two kilometres to school.

Regarding participation in the interviews, four graduate teachers per school were willing to participate in the study. At Kigali Modern School I got Beatrice, Chris, Paul and Elena. At East Highlands College there were Bonnie, Charles, Peter and Esther; while at New Rwanda High School, Benon, Collin, Philip and Eva were willing to participate (all pseudonyms). All together there were twelve interviewees, nine of whom were male, while three were female, which represents twenty five percent of the total number of participants. At the secondary school level, this is representative of the gender balance in secondary science teaching, although the current pattern is likely to change given the Government's commitment to gender equality in Rwanda. I had requested the Head teacher of each school to select participants. The following table shows the number of schools, teachers and subjects taught at each school.

Table 4.1: Names of schools, participating teachers and subjects taught

Name of school	Name of teacher	Subject taught
Kigali Modern School	Beatrice Chris Paul Elena	Biology / Chemistry Chemistry / physics Physics / Maths Chemistry / Biology
East Highlands College	Bonnie Charles Peter Ester	Biology / Chemistry Chemistry / Physics Physics / Chemistry Biology / Chemistry
New Rwanda High School	Benon Evelyn Phillip Collin	Biology / Chemistry Chemistry / Biology Physics / Maths Biology / Chemistry

I was of the view that teachers are articulate and can express themselves freely, that they would have time to be interviewed and that they are usually willing participants. For this reason, I expected that our interaction would result into gathering rich information. For me, these recently graduated teachers represented a group of participants who would meet the characteristics of interest for my research. They are the ones who are the authorities on their personal experiences. They have lived the experience. They do not need to read or be told about it. I had a conviction that their experiential expertise and authority would not be matched by any other stakeholder in the training process. Therefore these teachers were selected according to the needs of my study and not to the dictates of external criteria such as in random selection. My choice of schools was also dictated by accessibility. I am aware that this might have limited the range of interviews. However, by employing other forms of data collection (triangulation) through classroom observation, some of the limitations arising out of the limited range of the interviewing process were taken care of.

4.4: Interviews

4.4.1: Piloting the interview

The Sussex Institute had developed a series of ethical principles which guided me as I went out to carry out this research. There also exists published literature on various codes of ethics in conducting social research such as that outlined by Busher (2002). I followed these guidelines in obtaining informed consent from the participants. In addition, I hold formal written permission from the Permanent Secretary of the Ministry of Education to conduct research in Rwandan educational institutions. These considerations are essential for researchers because the outcome of research can be subject to wide interpretation. That means the biases, intent and views of every one concerned with a piece of research are open to debate.

Effectively, data collection started in October 2008 when I conducted the first set of interviews as part of the piloting of the research instrument. The pilot interviews were conducted on two schools – one in the neighbourhood (Gorrillaland Academy), and the other on the outskirts of the city (A Thousand Hills High School). Both are pseudonyms. Two teachers participated from each school. This was done in order to prevent or reduce possible characteristics unique to a single school. The idea was to gain an alternative perspective on teacher professional development. The objective was

to deepen my understanding of the responses from the interviews. I was also aware that in social research, bias is inevitable. The most important thing for me was therefore to create conditions for open and informed discussions with the teachers by way of a shared experience.

I started with self introduction and the purpose of the interview. Being mindful of the power relations between myself (as a senior member of the Ministry of Education management team) and the secondary school teachers, I made it a point to explain that I was a doctoral student, that the interview would not be used for other purposes, and that their responses would be kept confidential. I re-assured the participants about the anonymity of the whole exercise, and that I would not reveal their identity and the names of the participating schools. I made sure that nothing would cause harm to the teachers, had sought their consent well in advance, and I always made it a point to respect their privacy. I was conscious of my identity because the construction and projection of my identity in the interview based on the levels of self-knowledge and conscious self-monitoring are significant to this articulation, the production of the interview text and its later recontextualisation in analysis and writing (Dunne, et al., (2005).

The first interview at Gorrilaland High School had met with some an unexpected experience. When I asked Godfrey, the physics teacher if I could record the interview, his facial expression had visibly betrayed a sense of uneasiness and anxiety although initially he had been enthusiastic about participation. I took time to explain the purpose of my research further and after exchanging some pleasantries and reassuring him that his name would not be mentioned, Godfrey consented to the recording. This experience was to recur at the A Thousand Hills Academy where Alphonse had preferred to give a written account of his experiences rather than get recorded. This experience might be explained by their lack of command of English language and the fear of making mistakes. I explained that he was at liberty to speak in Kinyarwanda, our mother tongue if he found challenges in speaking English. I was also conscious of the limitations of taking notes during an interview which can be challenging since I could not be certain that I could note down all I needed to, and whether important information might have been left out. Besides, I was interested not just in what the teachers had to say, but also in the way that they would say it. For this reason, I was alert all the time to what was

being said, following up interesting points made, prompting and probing where necessary, and made effort to draw attention to any inconsistencies in their responses.

Another experience involved the location of the interviews at the Gorrilalund High school. The first couple of interviews had been conducted in some parts of the staffroom. Some teachers had kept coming in and going out which was distractive. Also the arrangement of the desks made it possible for those coming in to get attracted to what we were doing. I had to try non-verbal communication skills to encourage participants to keep focused.

There was also the challenge of the language of interview. One teacher had preferred to be interviewed in *Kinyarwanda*, our mother tongue for ease of communication, so I had to do translation sometimes. To compound this problem, where I had to take some notes and the participant preferred to speak *Kinyarwanda*, I had to record the notes in English which meant direct translation. All these dynamics take a long time and sometimes, some words or meanings may be left out or recorded incorrectly. Also, the teachers whose interviews were recorded in English happened to speak in such a way that the sentences tended to be very short. They were not as continuous as I would have expected and sometimes some preferred to give me a written account of their experiences. This may be explained by the fact that Rwanda which joined the East African Community (English speaking) in 2007 was still adjusting to the use of English as the official medium of communication, and this was presenting challenges. Integrating these various forms of communication to produce a coherent whole proved quite a challenging task and was costly mainly in terms of time.

In any case, the initial interviews were important from a personal and professional experience as they helped me to seek clarification and elaboration, thereby allowing for the latitude to probe and expand on issues. Each of the research questions had been designed in such a way that it would be investigated through a couple of interview questions. This also helped me to obtain rich and varied information by approaching the topic from various angles. The previous interviews had taken 40 minutes each, but as I raised some issues emanating from classroom observations, I found that the conversations tended to last for about an hour. I took note of this and decided in future I would have to adjust the timing accordingly. Later as I prepared for the actual

interviews, I allocated one hour for each interview and the instrument was also revised to take account of the pilot experiences.

4.4.2: Conducting the interview

Following the pilot experiences, I always started the interviews by carefully explaining the purpose of the research. Also, I ensured that the interviews took place in more serene places, and some times I was allocated space in the office of the Deputy Head teacher. I started the actual interviews with the rural school (New Rwanda High School). I first went through the formalities of introducing myself and the purpose of the interviews as I had done in the pilot. Every time I visited a different school, I informed the participants that except for me, only my University of Sussex supervisors would gain access to the data collected. However, I also explained that at the end when I would be presenting my final thesis, I would aggregate the data and at that time, the thesis may be accessed by the public. I endeavoured to uphold ethical standards which included the consent of the teachers and I made an effort to explain what the research was about and ensured that no harm was caused to them. An effort was made to uphold the teachers' self esteem, to respect their privacy through confidentiality and treated them with consideration and respect without deception.

I decided to allocate a maximum of one hour per interview, and to meet with only two teachers a day so as not to rush the interviews. That required two visits a week in each school. I also had to consider the language used because in Rwanda, some people prefer to speak Kinyarwanda, English or French. The teachers who felt that they were not fluent in spoken English or Kinyarwanda preferred to write down their experiences and had asked not to be recorded. I was also conscious of the importance of interpersonal skills in interviewing, so I made every effort to put the respondents at ease, asking questions in an interesting manner, recording responses to avoid upsetting conversational flow and giving support without introducing bias. I am also aware that the interviewer may be limited or helped by his or her own sex, apparent age and background. For this reason given that all Rwandans share the same language, I was able to code switch from English to Kinyarwanda in some cases, and in others, the teachers preferred to write down their responses, and integrating these communications had proved to be quite demanding.

I employed semi-structured questions. According to Strauss (1990), if one uses structured questions, respondents may answer only a question that is asked, often without elaboration. As a result of the semi-structured approach, some participants offered relevant ideas I had not expected. This created more opportunity for them to express freely what they thought. They were all open-ended and their focus may be summarised in the following key areas of teacher professional development, namely; training activities, content and pedagogical materials used in the training programme, teaching methods, the teaching and learning interaction and communication process, and teacher professional identity. During the analysis of data, I found the above features of teacher professional development quite relevant and significant, and the interviews provided another opportunity for further and deeper investigation.

Drawing from the works of Silverman (2007), Bell (2006), Robson (2002), Kvale (1996), and Oppenheim (1994), I used open-ended questions which are important in allowing respondents to say what they think and to do so with greater richness and spontaneity. As such, I managed to give a prepared explanation of the purpose of the study more convincingly than I would have done if I had used a covering letter in questionnaires sent through the post. I gave attention to some potential challenges and had noted for example, that the larger or the more dispersed the sample, the greater the total cost of the interviewing operation including travel costs would be. I was attentive to what the teachers were saying, and in some cases what they were not saying. I endeavoured to be active without being intrusive which later was to prove quite challenging. I was also looking out for body language which may indicate that they might become uneasy or anxious about the way I was asking questions.

I found interviewing such a challenging, but a worthwhile activity. During our interactions, I encouraged the teachers to focus on what they considered to be important features of their training which they remembered vividly, whether they were positive or negative. There is always a good reason why an individual should remember something regardless of whether the event was positive or negative. I had to overcome various interconnected dimensions which were methodological, theoretical and substantive, and which 'construct the researcher identity and locate the ways in which the interview as text is produced, analysed and incorporated into public comment about social life within the written report' (Dunne et al, 2005:36).

It was important to capitalise on this opportunity to listen to what the teachers had to say about their experiences during their training, and the feelings that such experiences might have had a bearing on their professional identity; and whether such a phenomenon could influence their classroom practice. This kind of interaction drew me closer to wanting to know and therefore to investigate further why what they had said was significant to me. All interview responses were transcribed verbatim through the use of secretarial services. For the urban and semi-urban schools, I had an opportunity to get back and cross-check the transcribed interview data with the participants. As for the rural school, I was not able to go back due to logistical reasons.

4.5: Classroom observations

Another key data source was observation. Due to limited time, I observed two teachers from each school. The schools were established by Christian Missionaries during colonial rule and later taken over by Government after independence. They tended to emphasize size rather than proximity, in such a way that one large school of about 1000 students would be established in an area to serve a whole geographical population as they had boarding facilities. According to the Ministry of Education Planning Office, the average teacher/pupil ratio in a secondary school was 1:40 in 2009. However, the classrooms I visited tended to have between 40 to 45 students per class. Like the schools, the classrooms (laboratories) are large and old, but well maintained. Science lessons are taught in the laboratories. On average, the wooden tables are clearly worn out and old. Students seat in pairs on wooden stools, and sometimes in rows of three depending on the number of students in the laboratory. I spent eighty minutes of classroom observation per teacher. Single lessons take 40 minutes, while double lessons take 80 minutes. The time-tabling of science teaching in Rwanda tends to take a double lesson, with the first 40 minutes focussing on the ‘theory’ part of the lesson, while the second part shifts to the ‘practical’ aspect of the lesson.

For ethical reasons, before we moved into the classroom (laboratory), I always requested for permission to note down some aspects of the lesson proceedings for purposes of our subsequent interactions. I assured the participants that I would delete personal details, name of school and other general information that might link the lesson plan to the participants or their school. At the time of the introductions, I had clarified to

the teachers that I was not interested in grading the lesson as the purpose was not to evaluate them, but that the interactions were meant for academic purposes. I was always conscious of my identity, and made it a point to try to look as 'normal' as possible to avoid intimidating both the teacher and the students. I had also practised well in advance to make sure that my facial expressions did not betray either a sense of approval or disapproval during the course of the lesson.

The observations of classroom practice in terms of interaction especially the teacher behaviour and communication processes informed the content of the semi-structured interviews. The purpose was to follow-up many of the issues observed in the classroom with the interviews. I was interested in 'being there while the action takes place, participating in activities to a greater or lesser extent, by watching, listening, and sometimes by speaking, writing or drawing' (Dunne, et al., 2005:55). My interest was to gain experience which I would later reflect on during the interviewing process, and this was the central purpose of being in the classrooms with the participating teachers. The essential purpose of the experience of the setting was to transform into text the experiences I would get from the classroom interactions with teachers, which enabled me to highlight incidents of interest as they occurred. I was aware of the possible effect of my presence, and that the nature of the effect would be influenced by my identity, since 'who you think you are as a researcher will be important, and just as important, probably, more so, will be who they (the other participants) think you are' (Dunne, et al, 2005:61. However, rather than 'being a reason to rule out observation as 'biased', it means that the issue of identity becomes a very central one in the process of planning research' (Dunne, et al., 2005:61).

Drawing from the works of Arends (1994), Kyriacou (1991), Duke, (1990), and Perrot (1990), I focussed on key features of the classroom practice which included lesson presentation, mastery of content, appropriateness of teaching methods, communication and classroom interaction, assessment of pupils, and lesson conclusion. These aspects of the teaching and learning process were meant to be discussion points as the interactional process is quite complex and can not be easily demarcated. I made an effort to relate what the teachers had said during the interview with what I was observing, as the observations were mainly a follow-up of some of the issues emanating from the interviews and vice-versa. At the end of each lesson, I interacted with the teachers as we

discussed the lesson. I had assured the teachers that I was not evaluating them in an official way, but that the discussions would be beneficial for academic purposes on both sides.

Dunne, et al., (2005:59) have observed that issues about ‘what the research focus is as well as theories about what its significant features are and where they might be found, feed into decisions about what actions will potentially be visible’. My interest therefore was to probe, analyse and interpret what I was observing as I gathered the data. I was able to gain direct access and insights into the schools’ physical settings, and was able to make permanent and systematic records of interactions and settings, while remaining context sensitive. I was also cautious about the high demand on my time and resources.

The decision I took for this approach was two-fold: the first focus of the research was to tap the teachers’ experiences of the training programme. The second one was to listen to the issues and challenges related to the training programme viewed from the teachers’ perspective, and whether they had any effect on their professional identity. That is why I decided not only to listen to what they had to say, but also to see what they were doing by observing them in action. My position in the Ministry of Education happens to be a great source of interest in this professional and educational setting. I was therefore determined to take advantage of this opportunity to educate myself by being there in the classroom, and through my interactions with the teachers. This study is bound to influence my personal thinking, and it is my intention that the analysis will be sufficiently powerful to affect the future training policy of the Ministry of Education.

4.6: Documentary analysis

In addition to interviews and classroom observations, this research used documents written on the Rwandan education sector after the 1994 genocide. These are mainly in the form of policies and consultant reports commissioned by the Ministry of Education. I analysed those documents which had relevance to my research. Document analysis has a long tradition in research, and has often an aura of respectability, perhaps due to the high regard in administrative circles and educational systems in which written text is held (Bryman, 2004; Cohen, et al, 2003; Coleman and Briggs, 2002). Hence, in this research I used document analysis to complement both interviews and observations, and to provide triangulation to improve the trustworthiness of the research results. In order

to ensure relevance and accuracy of the documents to my research, I re-checked, verified and analysed each one in relation to the other sources on the same subject of teacher professional development. However, the documentation that I accessed turned out to be different from my prior expectations. In particular, there was a lack of detail on teacher professional development, and specifically on the subject of learner-centred teaching approaches which came in form of statements, but with little elaboration and illustration. In addition to the Ministry of Education documents, I was also able to collect some documents from the participating schools mainly in form of lesson plans which I found to be relevant to my research. The lesson plans always came handy as they provided a framework for our interactive discussions which illuminated what was going on in the teaching and learning process.

4.7: Ethical considerations

I was conscious of the potentially conflicting issues regarding my researcher positionality as I embarked on this research journey. On one hand I wanted to consider myself as a detached outsider who would try to conduct an unbiased investigation. On the other hand, my position as a senior member of the Ministry of Education management team (Director of the National Curriculum Development Centre (2001-2005), Executive Secretary of the National Examinations Council (2005-2011), and currently as the Director General of the Rwanda Education Board, brings with it professional dilemmas some of which cannot be resolved. For example, it is possible that some teachers could have been keen to talk to me because of the perceived power they might see in me to change things. On the other hand, as the research design involved talking to teachers who had completed the course and were already graduates at the time of data collection, they could have been more comfortable to talk to me than they would if they had still been student-teachers on the training programme.

Thus owing to my position, I had been part of the decision to establish the training programme back in 2001 and therefore cannot claim to be an outsider completely, and although my work-place is neither Kigali Institute of Education, nor the secondary schools in which I was conducting the research, I have a part to play in the dynamics of the training programme at the policy making level. It is also possible that my physical presence could have had some influence on the kind of data I collected and the way it

was said to me. In such circumstances, participants may tell the researcher what they think he or she wants to hear. In any case, I decided against hiring an assistant to conduct the research on my behalf because I wanted to listen first hand to what the graduate teachers had to say. To down play my position, I always made it a point to dress casually whenever I was conducting interviews or doing classroom observation to signal that I was 'off duty' in my official capacity. The Rwandan dress code is quite formal in Government departments, so I 'broke' the code for this purpose.

Other issues that usually arise out of research conducted by people in my position in their local environments concern the uncertainties surrounding participant worries about what such people might do with the research. Thus, 'questions about how the researcher and the respondents will relate to each other in the interview are of paramount importance' (Dunne, et al 2005:32). People in schools and districts tend to think that policy makers will influence decisions affecting them. This concern might be legitimate because people like me tend to be involved in decision making processes which in one way or the other may influence, or even shape their future behaviours and those of the participants directly or indirectly. That may explain why participants in this kind of interaction may worry that the researcher may 'discover' some issues that they do not want discussed either internally or externally. They usually imagine that if the research had not taken place in the first place, then such issues, observations, or outcomes could not have surfaced. These concerns are usually associated with participants who worry that the outcomes of the research might have a direct bearing on their work opportunities such as career promotions, opportunities for further study or transfers.

I endeavoured to minimize such concerns by assuring the participants as earlier stated that I would ensure complete anonymity and trustworthiness, as it was important to secure cooperation and maintain credibility and confidence of the participants (Brock-Utne, 1996). I made it a point to get back to the schools to cross-check and verify data. Besides, I always took time to explain that both my job as the Executive Secretary of the Rwanda National Examinations Council (at the time) and my research had nothing to do with their career promotions or transfers and other related uncertainties usually associated with researching phenomenon in one's working environment.

I was also aware that my identity brings with it certain personal and professional feelings and emotions of subjectivity related to my earlier involvement in the process

leading to the formulation of the Teacher Development and Management Policy between 2003 and 2005. Additionally, my background as both secondary school teacher in Uganda and Lesotho, and later as lecturer in education in Botswana before taking up a senior management position in Rwanda may arouse feelings and emotions about teacher training and classroom practice. For this reason, I was always conscious of this phenomenon and made consistent effort to verify data and to make sure that my analysis was systematic.

4.8: Data analysis

The objective of analysing the data was to go beyond the spoken and sometimes the written word, read between lines, and search for deeper and hidden meaning in the responses of the participants. This helped me to get some understanding of the teachers' lived world through their experiences during their in-service training. I endeavoured to ensure that I had the relevant approach, methods, research questions and other important issues such as the way I collected data, how I selected schools, and how I designed and conducted interviews. In addition to all these dynamics, I designed mechanisms for analysing both the interview and observation data in such a way that the data would generate relevant information which I needed to form an understanding of the teachers' lived world through their experiences. This relevance was of great value to me since I needed it in order to form a basis for my own understanding which was necessary for giving the teachers a voice based on their own experiences.

As part of the planning of data analysis, I summarised the participant responses. I then used some illustrations and had selected salient features of what participants had said verbatim. I made use of some aspects of 'grounded theory'. According to Usher (1996:77), grounded theorists 'share a conviction with many other qualitative researchers that the usual canons of 'good science' should be retained, but require redefinition in order to fit the realities of qualitative research and the complexities of social phenomena'. Straus and Corbin identify these as 'significance, theory-observation compatibility, generalisability, consistency, reproducibility, precision and verification. This method of data analysis proceeds in steps. Usher (1996) suggests ten phases, namely: collecting data, transcribing data, developing categories, saturating categories, providing abstract definitions, theoretical sampling, axial coding which

involves developing and testing relationships between categories, integrating theory, grounding theory, and filling in the gaps. He warns that it was never intended that these steps should be understood as rigidly prescriptive, since the research may choose to go back or forwards, or to spend more time on some rather than other, but they were 'intended as a possible model for delivering the method' since theories are interpretations made from given perspectives as adopted or researched by researchers, therefore the emergent account is always positioned' (p.77).

Informed by this perspective, I was interested in looking out for similarities and differences in the participant responses and had to find ways and means of ensuring that my analysis would be relevant and trustworthy. I attach a lot of value to my research because future researchers on the subject of the Rwandan teacher professional training programme may be able to find my work relevant for their own research, since this concept happens to be virgin territory in Rwanda for those interested in this area. I made sure that the analysis would reflect participant responses and not my own pre-conceived opinions. This was to ensure that the analysis was relevant to the requirements of the research in terms of why the participants had responded the way they did.

4.9: Coding and categorisation of data

Once the data had been transcribed, I read through several times to develop an understanding of what the teachers had said in order to enable me to give them a voice through their experiences. I then went back to look for professional development related specifics, with particular reference to the research questions in terms of what the participants had understood their experiences to be, whether the training had used learner-centred teaching and learning methods, and how it had impacted on their professional identities. Having read through several times, I started to construct conceptual and substantive categories or themes that cut across, the kind which had been indicated by the data through coding. According to Strauss and Corbin (1990:113), in the data coding process, 'all events, happenings, actions and interactions that are found to be conceptually similar in nature or related in meaning are grouped together under more abstract concepts called 'categories'. However, 'this conceptual name must be suggested by the context in which an event is located'.

Miles and Huberman (1994) have pointed out three concurrent flows of activities at the level of qualitative data analysis, namely; data reduction, data display, and drawing conclusions and verification. On the other hand, Silverman (2007) has identified four basic operations that are essential for data analysis. They are: (a) coding, that is, attaching meaning to pieces of data by labelling them (b) keeping memos, that is, recording ideas while coding (c) abstracting, and (d) comparing. I was informed by this model of activities to process and shape my data. I was not interested in doing grounded theory as such. Rather, I learned from it and then used many of its techniques without necessarily following the procedures completely. Thus, the sources emanated from the participants, some observed practices, and the literature. I drew the categories by interpreting concepts within the data. I focused on what was striking, the purpose being to transform data into findings.

More often than not, concepts bring with them commonly held meanings and associations and when we think about them, certain images may come into our minds. I was conscious that such meanings do not bias my interpretations of the data and prevent me from seeing what the ‘new knowledge’ might be. The concepts emanated from the participants’ experiences, their classroom practice in terms of planning lessons and classroom activities, using instructional materials, communication and interaction, use of relevant teaching methods, and how they were variously assessed. There were also issues about the teachers’ commitments to the training and some rewarding and not so rewarding experiences. These concepts which are presented in chapter 5 fall under broad categories which are sometimes not discrete as some of the data were very rich and dense with several issues worthy of note. By giving the teachers an opportunity to articulate their experiences, I was able to form a basis for my own understanding of the Rwandan in-service teacher professional development programme.

Researchers tend to worry that insiders undertaking research in the environment from which they hail might not register what may usually be taken for granted. This is because such researchers claim that only an outsider can look through an unbiased lens. However, researchers such as Evans (2002) counter this argument by arguing that all researchers are subject to values which influence interpretation. Through the whole process, I endeavoured to be reflective, constantly checking on my field work diary notes for instance, about participants’ reactions to my questions and their experiences. I

looked out for what might have been missing. I also took key words and phrases from my research questions such as professional development and the nature of knowledge and experiences that constitutes that process. I then interrogated their meanings from the perspective of the data collected. I had employed colour coding using the key words in broad categories and then combining similar ones from interviews and observations or literature. I did this on daily basis.

Before the next visit, I made sure I had transcribed and analysed the previous visit's interviews. I did this to ensure that if some concepts had emerged from a particular interview and might have been unclear, I could then seek further clarification from the next interviews. In so doing, some recurring themes eventually became guidelines for further data collection. At a later stage during the coding process, the structure of coded responses had to address some considerations such as what the feelings felt by the person telling the story were, what the reasons for the above feelings were, and what the event or situation was about. This required me to identify first which respondents had said what and in what ways, how they had felt and why.

The process demanded that I group participant responses and categorise them. Then I had to compare responses in an effort to find similarities and, or differences in the way different participants had felt about the training programme. It was after reading through the scripts several times, that I open-coded the data. After breaking down, examining, comparing, conceptualising, and categorising the data, I identified concepts which I classified into broad categories. This was revealed by listening to what the participants were communicating through the data and how they were saying it. Thus, by developing concepts and arranging them into categories, and by subjecting the coded data to constant reflection, I was able to explain and advance arguments about the Rwandan training programme, and generated a set of proposals for teacher educators, educational planners and policy makers, thereby contributing to the improvement of future training agenda in Rwanda.

4.10: Summary

In retrospect, the whole process of data collection and data analysis was successful albeit not without challenges. My initial experiences with the pilot interviews in which the participants had been intimidated by the recorder are still fresh in my mind. The idea

that teachers in the staff room would take my interviews casually and continue to make noise in the staff room still ignites some curiosity about the school professional ethos and culture. The language issue in which I had to code switch from English to Kinyarwanda is also worth of note. Be it as it may, I am of the view that my position made it possible for me to gain access without difficulty at least in technical terms. However, I was also conscious of the implications this might have for the quality of the data I collected in case some of them simply told me what they thought I wanted to hear. For that reason, I had been aware of the ethical issues and challenges related to ‘insider researchers’ and to explain the purpose of the research before hand.

In technical terms, the only school I did not know well was the rural school. I had requested the Head teachers to arrange for what they considered to be appropriate times for teachers for both classroom observations and interviews. In the process, I was able to meet all the participants without difficulty and as a result was able to collect a lot of data. I am aware that my position may be a source of subjectivity and one would wonder whether someone else not in my position would have gained such access easily, and been able to collect the same kind and amount of data and come to similar findings. Nonetheless, as a social researcher I could not distance myself from this process completely as I am part of it. I hoped that through triangulating methods in which semi-structured interviews and classroom observations were conducted, I would overcome some of these ethical considerations.

CHAPTER 5: TEACHERS' EXPERIENCES OF THEIR TRAINING

5.1: Introduction

This chapter analyses the teachers' experiences of the training programme, the teaching and learning approaches employed, and the effect of the training on their professional identity. The analysis is informed by the respondents' views and some observed practices, the theoretical principles of teacher professional development, and the policy guidelines of the Ministry of Education. Respondents who are drawn from three schools (see section 4.3) comprise a group of formerly serving, but untrained teachers who had graduated from the in-service professional development programme in 2007. They are the pioneers of the training programme, and since they were already graduates at the time of conducting this research, they are referred to as teachers through out the thesis. On the other hand, their trainers are referred to as lecturers. These lecturers were mainly recruited from the East African region (Uganda, Kenya, Tanzania and Burundi) soon after the establishment of Kigali Institute of Education in 1997. Over 90 percent of the qualified lecturers at the time of the commencement of the in-service training course were expatriate staff from the region. They had been recruited to start the four year full time pre-service course.

At the inception of the training programme, a key consideration was schools that were in dire need of science teachers. The curriculum of the in-service training programme focused mainly on the teaching and learning of science (maths, biology, chemistry and physics). There are also general education courses such as educational psychology, educational philosophy, educational sociology, educational management, and curriculum and instruction. Since general education courses are not teaching subjects in Rwandan secondary schools, I focussed on science teachers. As this research was conducted in 2008/2009, I was convinced that these graduate teachers had fresh memories of their training experiences. The sections in this chapter are guided and informed by the research questions and the data analysis of the responses of the teachers.

5.2: How do Rwandan teachers understand and experience their in-service training and professional development?

Glatthorn (1995:41) defines teacher professional development as ‘the professional growth a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically’. This includes both formal and informal experiences which imply social interactions, an examination of the content of the experiences, the processes by which the professional development will occur, and the contexts in which it will take place which have significant impact on teachers’ beliefs and practices and students’ learning (Ganser, 2000). In this research, the teachers expressed concerns about the inadequacy of the identification of their training needs before the commencement of the training. The teachers said that their interactions and the context of the training offered limited experiences. They said that their only source of content knowledge was the modules which they found to be insufficient. Bonnie believed that:

Our training was not enough because certainly the pedagogical materials are so important in science, you can’t do any experiment without using them, yet they were not there and even the few we got did not come at the right time, so we needed more science materials.

The teachers seem to have regarded the modules as their own ‘teacher’, a source of content knowledge and of security. This belief and understanding encouraged teacher-directed classrooms that use formulaic, sequenced and structured activities rather than more learner-centred instructional approaches. The teachers had not engaged in activities which have positive learner achievement effects, and had not been presented or provided with stimulating learning activities which are relevant to their experiences. The modules made very little use of their experiences and the teachers suggested that they were treated as ‘empty vessels into which knowledge must be poured’ (Kunje, 2002:311). Philip said that ‘some modules were not clear especially that they contained difficult words or vocabulary.’ At some level this was about the content knowledge derived from the modules which was pitched too high for the teachers. Charles explained:

It was not only us who struggled with the level, but also some of the lecturers who were sent to the training centre to explain modules they said they had not designed and they did not

understand these courses which they were supposed to explain to us.

The teachers said that when some modules arrived, they had already completed the very courses the modules had been designed for. Philip said that ‘some of the modules had been difficult to read and understand’, but that ‘as time went on they were revised gradually although we had already finished the courses when they arrived’. The idea of revising the modules was confirmed by Charles who said that ‘after some time, some modules were revised but they did not help us because we had already completed the course without them so when the exams came it was difficult’. I asked Charles why it had been necessary to revise the modules. He said that the teachers had ‘complained to the authorities that some of the modules were hard to read and understand.’ Beatrice added:

The modules did not come at the right time and there was lack of libraries with appropriate textbooks in our environments. This made it difficult for us to follow up some of those unfamiliar concepts in the absence of our lecturers who came when they wanted without telling us.

Charles said that they had been ‘required to read more books from Kigali Institute of Education library of which we had no access’. I asked Charles why he had no access to the library. He said:

We did not go to the library because when we went there we were told by the librarian that we can not enter for unknown reasons, so I can not bother going there again. And even other teachers did not bother to go there, yet we had no other source of information except the modules.

Charles said that he did not think that any of the other teachers used the KIE library. Esther explained further:

We resorted to reading some notes which we had taken during our training, and the notes were not always sufficient for our needs as we took them in a hurry. Those of us who were not fast enough to go at the pace of the lecturers would give up writing and wait to copy the notes from our colleagues at a later time or date.

Esther reiterated that sometimes they ‘could go looking around to see if somebody had anything to lend you so that you could pass your exams’, and added that ‘even finding someone to lend you a book was very difficult’. In the absence of pedagogical materials,

the teachers made use of the notes they had taken during the lectures. This is characteristic of direct transmission mode of delivery which did little to encourage learner-centred enquiry. It was likely to make the teachers identify with that familiar mode of teaching and to be deeply resistant to superficial attempts to change, as these methods have been found to have a powerful effect on how future teachers think about teaching (Feiman-Nemser, 2001; Evans, 1999; Kagan, 1992). Chris was of the view that ‘science needs a lot of practice so that we can do better’, but that ‘some modules in chemistry and physics had very few contents that would help us to answer questions.’ However, Beatrice said that after some time, the questions were written at the end of each module to help teachers during their revision. She explained:

After we complained that we did not understand what they were teaching us, they made the modules in such a way that every lesson ended with questions and they contained a list of answers. We needed the answers because they could help us especially when we were revising for our tests and exams since we didn't have anybody to help us.

Since a majority of the teachers live in remote areas, this was even more appreciated there, but not all of the teachers were as positive as Beatrice. I asked Collin what his experiences were with teaching science. He said that they ‘were not given time to go to the laboratory’, that ‘practice time in the laboratory was limited’, and that ‘there was little familiarity with science equipment’. Although the various Ministry of Education policies spelt out clearly the need for learner-centred teaching and learning, the course paid lip service to the policy requirements.

At another level the teachers had strong feelings about the overall duration of the course which might have portrayed them as weak. ‘The programme took a very long time, about six years instead of two or three years for diploma as promised’ (Beatrice). According to the teachers, this was not because their study of the materials was more demanding so as to take longer than anticipated. Rather, ‘it was because the modules were not there when we needed them to study and to revise for our tests and exams’ (Benon). This issue was echoed by all the participants in the research because ‘it was not our weaknesses or because we did not understand’. Esther said: ‘we were told by our lecturers that the modules were on their way without any further explanations as if we are children’. Charles said that this made it difficult for them because they were:

Teaching very quickly and sending many modules at once to read and be examined on them in a very short time and this became difficult to us; so if we did not pass the tests and exams they said we should work very hard, but we needed something to use for our learning in order to pass the exams.

This was interpreted by the teachers as very unjust. Esther for example referred to the 'unfairness in the non-achievement of the objectives of the programme'. She attributed this to the fact that 'many teachers did not pass their exams at first and even those who passed, some had their diplomas cancelled for reasons they could not explain to us'. In terms of communication and interaction between the two parties, this seemed to show no understanding of the needs, significance and purpose of the training for the teachers. In the process, the course did not take advantage of the opportunity for 'direct links with practical problems, advice from the teachers and socialization into professional norms and standards (Lewin and Stuart, 2003:191). Benon claimed that it was 'as if they don't know that we wanted to study and go back to our schools and our families'. The teachers said that they felt let down when the time table was not respected.

According to the teachers, the poor communication and interaction slowed down progress of their course from year to year which led to the course taking six to seven years instead of three to four years. This meant that the incentive to continue was diminished. Eva expressed some disappointment about her experiences with the training:

The training did not give tangible output because the programme was not implemented as required since we lost a lot of time which was not our problem, yet they could blame us for failing in the tests and exams.

This feeling was echoed by some of her colleagues as well. They complained about 'difficult modules, no textbooks, and uncertain study time and schedule without communicating to us', and unpredictability of tests and examinations. Collin observed that:

There were no modules when we needed them and there were no textbooks, and we were not taught well which created challenges to us, therefore I can say that the training didn't achieve its objectives for us to finish our course in four years as they had told us.

All the participants without exception talked about challenges related to pedagogical materials in form of modules, difficulties in the mastery of content knowledge, delivery mechanisms and the way they were assessed. The participants' displayed dissatisfaction and sometimes outright emotions about the way the programme had been conducted which became difficult for the teachers to learn. Charles claimed that some of their lecturers had difficulty getting the subject content across:

There are some lecturers who were sent to the training centres to explain modules they did not design. They did not understand these courses which they were supposed to explain to us which made it difficult for us to learn and to prepare for our tests and exams.

Peter confirmed:

There are some modules we were examined on without getting a lecturer who understands that course in the centre, and they could tell us that they were not the ones who designed that module, yet we did not know who to approach.

Other teachers were also not so forthcoming, so for example, Chris thought that their training had not kept pace with the demands of the needs of the teachers. He explained that some science teachers did not learn much because they got confused 'as there were no lecturers to give us explanations of some modules during the weekends or holidays when we needed them.' I asked Chris about the nature of explanations that the teachers required. According to him, the problem was that in the biology-chemistry- education combination, 'we were given mathematics that has no root in secondary schools so we needed a lot of explanations.' In other words, they were being expected to do mathematics at a much more advanced level than was needed for their teaching. The mathematics appeared to be about providing material to test them at their own level as mathematicians rather than about training them as science teachers.

Chris's comments can hardly be categorised as an outcome of good teaching experience and there were more experiences of this nature as Benon did not seem to appreciate as much either. He said that the programme had no output because 'it didn't issue diplomas to some people who were enrolled to the extent that some teachers were not awarded diploma after 6 to 7 years.' This experience is indicative of a training programme that may have set standards and 'adopted an assessment system without providing adequate resources to help the teachers learn to meet those standards in

practice' (Feiman-Nemser, 2001:1032). This suggests that there is need for all those involved in the teacher professional development process to understand and appreciate the training demands, and continue to support teachers through out their training.

5.3: To what extent does the Rwandan teacher professional development programme use and promote learner-centred teaching methods?

5.3.1: Teachers' knowledge and experiences

Chan and Elliot (2004:819) emphasise the need for the use of learner-centred teaching approaches which demand knowledge of the learners' needs and experiences, and that 'instruction based on learner-centred principles provides opportunities for learners to draw on their own experiences and interpretations of the learning processes'. Research evidence (Bell and Gilgert, 1996; Howe & Stubbs, 1996; Pajares; 1992) suggests that teachers teach in different ways because their beliefs are more powerful than their knowledge in influencing the way in which they teach. In this process, the role of a teacher is to present the lesson to students in a logical sequence so that knowledge is constructed by individual learners and therefore the role of the teacher is as a facilitator of the teaching and learning process. In this connection, the social interaction and communication among teachers is an important element in teacher professional development. This demands regular communication and interaction.

Taking into account the Rwandan teachers' current state of knowledge and experiences was essential because their training was about gaining increased experience, 'examining their teaching, the content of their experiences, the processes by which the professional development would occur, and the contexts in which it was going to take place' (Glatthorn, 1995:41). In the training, the inability to take into accounts the teachers' knowledge and experiences were seen as a weakness by the teachers. Beatrice attributed this weakness not to the teachers, but to a lack of communication and interaction. She revealed:

Our training lacked communication and we did not have time for interacting with our lecturers to tell them our problems. Moreover there was no explanation for the lack of communication, and when we enquired when the lecturers were coming we were asked why

we wanted to rush as if we were not concerned to finish the course.

The inability to make use of the teachers' current knowledge and contextual experiences as a starting point for their learning was a major factor in the way the course was conducted. This was a missed opportunity to 'change the way teachers interpret particular situations and decide how to respond to them' (Kennedy, 1998:56). This process demands effective communication and interaction which according to the teachers was missing. The teachers said that they had difficulty understanding the lecturers at first hearing and needed to have them followed up.

As already mentioned in the introductory part of this chapter, the training was conducted by lecturers, a majority of whom had just been recruited from the East African region to run a pre-service course. Since Rwanda had never had a degree level teacher training institution before the establishment of Kigali Institute of Education, this also meant that the few Rwandan lecturers were also inexperienced contextually as many of them were from the diaspora and just returned to rebuild the country. It is therefore not clear whether this could have contributed to the teachers' complaints about lack of communication and interaction during their scheduled face to face time of weekends and holidays. It is also not clear whether the lecturers might have been more familiar with the pre-service course requirements compared to the in-service training, whether they did not have enough time, or simply did not value the untrained teachers' knowledge, or whether they were still trying to adjust to the Rwandan secondary school context as the majority of them had not taught in Rwanda before.

The pre-service training course provided for a four week teaching practice in which lecturers were required to visit schools once or twice to assess their students. However, this might not have given them enough time to understand the circumstances and needs of untrained teachers who needed in-service training. Besides, immediately after the 1994 Genocide, there was a massive school construction effort, and this rapid change of school mapping might not have made contextual understanding for the lecturers any easier. Therefore, however much valued the teachers' practical knowledge might be, the conditions under which the lecturers worked might not have been conducive for their situated understanding of the untrained teachers' needs and circumstances.

When I asked Philip how he made use of his training experiences, he said:

There was no communication and interaction between us and the lecturers, so sometimes we failed to get someone who can explain to us because many of us live in villages and can not read this alone without getting someone to explain some difficult concepts.

Philip emphasised that there was limited face to face contact and little help ‘when we did not immediately understand’. The course seems to have assumed that the teachers were autonomous learners, or that they had access to resource-based learning. On one hand it over-estimated the teachers’ capacity for self-learning, and on the other, it also over-estimated capacity to ‘generate formal knowledge and theory for teachers to use in order to improve practice’ (Cochran-Smith and Lytle, 2001:47). Peter said:

Some modules had not been clear especially that they contained difficult words or vocabulary and the lecturers sometimes had some difficult courses which they failed to explain to us when they came to the training centres during the weekends or in the school holidays.

I asked Charles what the overall experience of learning in the training had meant for him. He replied:

The lecturers were always coming very quickly and teaching very quickly without having enough time to discuss some of the things which had taken place in the lectures, therefore I can say that the communication and interaction was limited in our training.

It is not clear whether this communication problem may be in part because the Ministry of Education made mandatory the use of English as a medium of instruction at all levels of the education system. Most of these teachers would have received their education previously in French, and so it is likely that they would never have come across the technical vocabulary of their subject in English before. They could still be struggling to adjust from teaching using French as a means of communication to English. Their unfamiliarity with English was confirmed when it came to the interviews as in the rural areas it was not possible for me to conduct them in English. It is possible that because they were struggling with both language and concepts, the subject-based work was considered to be very difficult by the teachers.

Teachers’ comments about their experiences of the training indicate a lack of interaction and balance between subject content knowledge and pedagogical knowledge and skills in the teaching and learning process. In fact both were attempted simultaneously with

little successful integration, with the danger that the teachers would ‘lack a clear conceptual framework of what it means to learn to teach, and teach as they themselves had been trained’ (Lewin and Stuart, 2003:117). Evelyn acknowledged:

The professional issues and challenges which I experienced during my training were the lack of people to help me to understand the use of new methods, and using science equipment and apparatus in practical activities.

Research evidence (Cope and Steven, 2001; Eraut, 2000) suggests that teachers should have some knowledge of publicly available theories, but also point out that they have a tendency to teach the theory and expect the students themselves to make the connections with practice. This problem may be tackled by trying to make the relevance of theory explicit and by asking students to use it as a tool for the analysis of their own developing practice, but researchers have yet to find ‘a satisfactory solution to the paradox or reality of successful practitioners who do not appear to base analysis of their practice on such theoretical considerations’ (Cope and Steven (2001:923).

The challenge of the link between content knowledge and pedagogical knowledge in terms of the skill acquisition was also highlighted by Paul who indicated that the professional issues and challenges he had faced were ‘how to learn a better approach in teaching experiments in science.’ This problem was appreciated by most participants who acknowledged that teaching science in Rwanda needed to change. Charles was of the view that the method of teaching science was changing. He said that teachers must ‘leave the talk and chalk method to the method which includes active learning in order to improve the teaching of science in our schools.’ An example of why teachers seemed to attach a lot of value to the link between content knowledge and pedagogical knowledge in teaching science during the teacher training process is shown by Benon who had a lot of ideas on teaching science:

Teaching methods have been challenges to me since only theory was being taught which does not yield good results without practical work. There were problems of differentiating theory from practical activities and other professional issues; therefore the ability to concentrate on work fully especially explaining science concepts to students should have been emphasized.

Kahne and Westheimer (2000:372) have also observed that a growing number of teacher educators struggle to ‘demonstrate to their students the connection between

action (teaching), and the academic literature associated with pedagogy and learning theory'. They have argued that these educators hope to prepare teachers who are thoughtful consumers of educational theory, and as a result think carefully and critically about their own practice. However, there seems to be a contradiction because 'at the same time that teacher educators are seeking to close the gap between research and practice, schools are demanding another set of skills and practices from teachers' (p.372).

Benon emphasised that there had been a lack of 'proper methods of teaching science practical activities and lack of skills for preparing those activities.' Other participants had some mixed feelings about the benefits of their training and expressed an interest in learning more of the teaching methods. Elena observed:

To teach children by a person who uses theory and later uses practice brings a lot of achievements. This programme should have helped us as teachers to learn about teaching skills because teaching and learning science needs practical methods, and if this can be done in our training I am sure it can make a difference.

There is no single model of teacher professional development. Teachers have different styles and personalities and their work may be evaluated on different basis. In this particular case, we see difficulties in the acquisition of both content knowledge and pedagogical knowledge. Teachers emphasised the need for acquiring teaching skills and teaching methods. The graduate teachers had learned some content knowledge from the science modules and some pedagogical knowledge from the Education modules. However, they had been unable to generate and produce meaningful classroom practice in form of pedagogical content knowledge which results from the generation of knowledge, rather than memorising information from the modules. Therein lays the dilemma for the Rwandan in-service teacher professional development programme.

5.3.2: Teachers' experiences of the way they were assessed

In a classroom situation, assessment refers to 'the process of gathering, interpreting, recording, and using information about pupils' responses to educational tasks' (Lambert and lines, 2000:4). According to Watkins (2003:39), assessment is derived from the Latin word 'assidere' which means to 'sit next to'. This focuses the attention and importance of assessment as being situated next to learning and teaching. Stobart and

Gipps (1997) have identified four main areas of teaching and learning that are affected by assessment. The first area is student motivation. When students perform better in a subject, their motivation and self-esteem are increased and learning improves in the process. By contrast, failure may lead to lack of interest and withdrawal. Secondly, assessment affects goal setting of the learners as it highlights the next goal and provides feedback on success. Thirdly, assessment affects meta-learning which in turn influences the learners in their choice between playing active or passive roles and choices of learning strategies including self-monitoring skills. Finally, assessment affects evaluation of student learning in that it helps to evaluate current learning in order to reinforce new learning. Assessment need not necessarily be demarcated into the two traditional categories (formative and summative). Gipps (1994:13) argues that a particular piece of assessment can be neither, as it is ‘what we do to the collected data, and the function this serves, that characterizes it’, and therefore assessment needs to be ‘built into learning activities so that it becomes an integral part of the learning process, rather than something which happens afterwards.’

In this research, the teachers’ said that their experiences regarding assessment in the training were not very helpful. Bonnie complained:

We were not getting assignments or tests to know if we had understood the earlier modules before they brought new ones, and we had to know everything in the head because the tests and examinations were only based on the modules which did not always come on time.

Bonnie communicates this desperate expression of what amounts to unpleasant feelings. He sees the problem beyond module production. ‘Another problem is that there were too many exams in a short time’. I asked Bonnie why they were not always prepared for the tests and examinations. He replied:

It was not easy to be prepared because the documents were not clear and they did not come early, so we did not even know when we were going to finish as there was no communication regarding this issue, and we ended up taking six to seven years instead of three to four in our training.

Bonnie’s experiences of the assessment system of the course were also highlighted by his colleagues. According to most participants, there was no monitoring and feedback of the formative kind which is critical to teaching and learning. Cooper and McIntyre

(1996:110) have observed that today, the increase in information has outstripped both teacher and learner abilities to deal with it in a specified amount of time. The need for greater information processing skills has therefore ‘received greater attention and the teachers’ role has shifted to facilitator, which demands opportunities for learners to represent information in ways they found personally meaningful.’ The teachers claimed that these aspects were not available to support and enhance their learning during the training which caused deferred assessment as Chris explained:

There were so many challenges but they all derive from the long time that the programme took as there was no expected time for tests and examination, yet we wanted to finish the training and go back to our schools.

Chris’s account of lack of monitoring and feedback which serves to encourage learners to reflect on the teaching and learning process represents another gap in the assessment process of the training programme. It mirrored their experiences of the organisation of the course where they seemed to be kept in the dark about what was happening. Chris said that they were always ‘waiting for our lecturers but we did not know when they will arrive to help us with some of the modules which were very difficult for us.’ I challenged Chris to the effect that the lecturers were supposed to go to the provincial training centres during the weekends and during the holidays only, so surely the teachers should have known that. He replied:

Even during the weekends and the holidays they used to come when they wanted and if we did not see them today, we did not know if they will come tomorrow or next time. Because of that we did not even know how to go on with our studies or even to prepare our selves for tests and exams.

Watkins, et al, (1996) argue that teacher professional development involves making connections about what has been learned in different contexts, reflecting on one’s own learning and learning strategies, exploring how the learning contexts have played part in making the learning effective, setting further learning goals, and engaging with others in learning. Beatrice noted that in their training, there was poor communication and interaction as they ‘were studying many years without being assessed and then at the end many examinations were given in a short time’. This means that for the teachers the marks or remarks on their work simply told them about their success or failure, but not about how to make progress towards further learning which is what their professional

development demanded of them. The lack of monitoring of student progress and feedback was reported by all the teachers.

Black, et al, (2003:89) contend that teachers need incentives in the form of formative assessment which help to drive content in the direction of expected knowledge and skills. It identifies the next steps to build on success and strength as well as correct weaknesses, and ‘provides greater insights into the interactions between the teacher and the learner there by developing a partnership based on mutual respect and trust.’ Collin said that ‘even the tests and exams did not come on time, so we didn’t know what we should study or even what to revise.’ Beatrice related this to lack of sensitivity about their learning environment: ‘The problem is that they ignored conditions in which we studied and worked.’ To change teachers’ practices in line with what the Rwandan teachers and society at large expect from the training programme, some of these aspects need to be paid attention to. The training course needs to recognise that assessment is a way of thinking and usually involves change on the part of the teacher. A key shift in practice that has shown to support learning, ‘is for teachers to place an emphasis on the dialogue and communication that they have with students, and that students have with students, around learning and feedback’ (Black et al, 2003:81). The teachers here felt that communication was problematic due to the lack of dialogue.

Lack of incentives in form of formative assessments and other forms of assignments were given a lot of attention by the teachers such as Philip who said that ‘the assignments and examinations were not useful because they took too long to come and therefore we could not correct ourselves or learn from our mistakes.’ All the participants without exception said that most of the time, they were not prepared for the tests and examinations. Such a dilemma is explained by Chris who said: ‘When we asked when we should finish our studies, we were asked why we wanted to be in a hurry and that we should be patient.’ Chris added that ‘when the module was distributed, we studied it but there were no assignments and exams and after they came, the results also came too late.’ He further illustrated:

We were frustrated for waiting too long because we needed to get our assignments and our tests to help us to revise and to get ready for the exams. We wanted also to complete our training in time and go back to teach without worrying about our studies because combining both was not easy.

The teachers needed to improve their learning and were looking forward to their examinations. Beatrice had some mixed feelings about the lack of formative assessment in the subject content areas which resulted in some difficulties. She said that ‘the assessment was very bad especially in the science subjects.’ Dann, (2002:123) points out that the teaching and learning process demands mechanisms in which both the teachers and learners ‘consider the process of learning as well as outcomes, and feedback related to understanding, and not merely to partial evidence which may measure only an element of learning.’ Teacher experiences here suggest a need for more investments in skills and knowledge development for their learning. This is important as Esther narrates:

Only a few of us on this training programme managed to finish because in most of cases we always encountered problems with our tests and exams which were not solved. Moreover diplomas which were publicly awarded to some teachers were finally disqualified for non tangible reasons, and we were disappointed with that unfair action.

From personal experience, I am aware that the diplomas which had been cancelled for ‘cheating’ in examinations were eventually re-instated after the teachers had appealed to the Minister of Education. The teachers said that they ‘had been hurt by this experience’ as they insisted that ‘no such cheating had taken place’ and most of them emphasized that they ‘had been blamed for nothing’. However, from this account, the extent to which efforts are being made to assess progress of the teachers during their training is not clear. Assessing progress requires feedback to teachers in order to ‘develop teaching and learning strategies, boost their self esteem, inspire, motivate, cause them to think, and promote deeper learning and understanding’ (Hargreaves, 2005:216). What is clear though, is the gap between what was being provided and what the teachers needed and received during their professional training time. From this analysis, it is not clear whether the training might have produced the kind of reflective practitioner envisaged as an outcome of learner-centred teaching approaches. The kind of teaching and assessment that the teachers experienced could not have resulted into outcomes that encourage teachers to reflect on their previous lessons, and identify key areas of strength, but also some weaknesses to overcome in subsequent lessons.

As to whether the teachers had any guidelines set out for reflecting on their own teaching, Charles responded: ‘We do not have any official guidelines on reflecting on

our teaching in our school.’ Reflecting on teaching and learning requires effective formative assessment which ‘is situated in, and therefore inextricably bound up with, the structures of the teachers’ and learners’ interaction’ (Ecclestone and Pryor, 2003:482). I asked Charles about the importance of the teachers gaining skills to be able to reflect on their teaching. He replied:

I think this aspect could be important because it can give me an opportunity to see the areas where I am strong or weak. It can also help me to know where I can improve in the future or in the next lesson.

Charles valued the idea, but had acknowledged that it was not a requirement in his school and that his training had paid lip service to that aspect. In Kigali Modern School, I asked Beatrice whether she ever had time to reflect on her teaching in any systematic way. She recalled:

After teaching biology in one class, I go to another one, and then another one, and then it is time...., but I know that it is an important aspect because if I teach a lesson and I reflect on it, then if I have to teach the lesson again, I know that I can tell my students to do some exercises in a better way.

The idea that no time had been set aside for communication and interaction with the teachers, and no time to reflect together was problematic because even in other contexts, as Ecclestone and Pryor (2003:482) put it, it is during such interactions that ‘meaning was constructed through dialogue, where teachers were intellectually curious about the understanding of learners, and in turn learners were receptive to teachers’ feedback.’ Beatrice was aware that ‘possible remedial work was important where and when necessary if I could reflect on my teaching’. Torrance and Pryor (1998) have argued that by providing students with opportunities for reflection on feedback, they are in a better position to develop strategies and skills to assess their own learning and create their own feedback, that they are then able to apply this feedback to future learning via the assessment process, and that in order for learning to progress, students need to make sense of assessment. In this process, reflection becomes a key factor in meaning and sense making. Dann (2002) concludes that for assessment to have an impact on learning and practice, feedback is essential through collaborative dialogue, and that it requires both teacher and student to take responsibility for enhancing each other’s understanding

of learning progress and process, and to take responsibility for applying it to their own future practice and learning.

5.3.3: Classroom observations

The previous sections dealt with the teachers' experiences during their training in terms of the way they were taught and assessed. This section analyses some of the observed practices of the teachers in their classrooms. It highlights the nature of interaction between the teachers and their secondary school students. These formerly untrained teachers had recently graduated, and their classroom experiences imply a reflection of what they may have or had not learned pedagogically. It gives an indication of the extent to which the teachers had embraced the idea of learner-centred pedagogy into their practice. In one experience, when I asked Paul what he had thought of his lesson, he explained that:

Some modules required higher knowledge to be understood than that we had, and in science we need some experience so that we can understand and then be able to teach in our schools.

Paul who taught physics at Kigali Modern School experienced a situation similar to other teachers in which some teachers were able to put a lesson plan together, but when it came to the actual teaching the experience was different. This was reflected in his inability to plan active learning for his students in order to achieve the aim of the lesson. Paul started the first part of the lesson with the 'theory' in which he was teaching about the concept of balancing (pulleys), and moved on to talk about the fulcrum, load and effort. The theory part had consisted of definitions and descriptions of the different terminologies in what appeared to be a question and answer session with little regard to the relevance of the subject content to real life situations. Since teenagers play a lot and balancing is a popular game, there was an opportunity to link the lesson to the students' interest by playing the balancing game, or even to take them out of the classroom for such a balancing exercise. This missed opportunity resulted in the students' inability to link the theory part of the lesson to the practice session. In the second part which was 'practice', Paul simply read out some instructions, which the students quickly forgot and were on their toes to ask again. Some students were hesitant to handle apparatus until they saw others doing so. This experience was not an isolated incident.

Charles acknowledged:

The reality is that students must acquire skills to learn by themselves with practical experience and understanding the situation by themselves, and the teachers are not a bank of knowledge but we need to be trained more.

Science teaching and learning requires learning by doing. However, Lewin and Stuart (2003:38) have observed that even this may not necessarily guarantee that learning will take place, since in many cases, ‘trainees are ready to model themselves on memories of their own teachers, without being able to analyse clearly what made their methods successful.’ This demands further professional development as echoed by Bonnie. I asked him why he needed to be trained again when he and his colleagues had only recently graduated. My argument had been that other untrained teachers needed to be given a chance before those who had undertaken the training could go for further studies. I was looking at it from an equity perspective. Bonnie explained that what he had received had ‘opened my eyes and now I am ready for further training to improve my professional development’.

At the time of conducting this research, these were already trained and qualified teachers. The Ministry of Education’s stated policy objectives emphasize the development of competent teachers who are capable of using learner-centred teaching and learning approaches. The policies explicitly expect the teachers to be competent in using learner-centred teaching methods. However, the observations did not show evidence of the acquisition of the classroom skills as expected. There were problems associated with clarity of presentation and the classroom interactional process.

When it comes to classroom practice, one of the key issues of teaching and learning is the use of appropriate questioning skills (Cohen, et al, 1996; Arends, 1994; Kyriacou, 1991). There was limited demonstration of the use of effective questioning skills as low order questions dominated the lessons. There were also gaps related to giving students challenging activities to stimulate their understanding. All the teachers said that before the training they had not had an opportunity to learn about the teaching methods, but that the Education Modules had helped them to learn some teaching methods. However, these were not related directly to teaching science. In spite of such claims, there was a low level of student engagement in class activities. I asked Charles what he was going

to do to promote more active students' involvement and participation in class activities. He said:

I am trainable and I am a willing teacher to learn new ideas, and moreover we learned to work as a team and to help one another, so I can approach my colleagues to see if I can learn something from them.

Charles said that they had been accustomed to 'using theories and now practical activities are emphasized on, so I have to look everywhere for the teaching aids.' The teachers I had observed had some science equipment supplied by the Ministry of Education. These materials had not been enough for every school and every student in the classroom which forced students to share them out. This had been used as an excuse for the lack of the use of higher order cognitive objectives and learner-centred teaching. The Ministry of Education policies had made provision for teacher training to use participatory and active learning methods, but very few teachers appeared to be able to use these methods in practical classroom situations. The teachers I observed were following a transmission style resulting in the participants acknowledging the challenge of poor mastery of science teaching skills. Benon, said:

Teaching methods have been a challenge to me since only theory was being taught which does not yield good results without practice, and there were problems of differentiating theory and practical activities.

Such experiences can be exemplified by an incident in the New Rwanda High School where Benon taught about plants and flowers to a biology class. Although it is a typical rural school, it has relatively good science facilities. Benon started the first part of the lesson with 'theory', in which the class 'reviewed' the previous lesson, stated the topic and objectives of the lesson, asked some questions to which the students seemed to have rehearsed quite well including the names of different plants and flowers, advantages and disadvantages of different flowers and some structural arrangements of flowers. Students were then asked to discuss in groups. This was followed by a 'discussion', which was mainly a question and answer session in which no student asked a 'why' or 'how' question, but simply responded with a one word, phrase, or sentence answer.

In the second part of the lesson, which was 'practice', Benon asked the students to draw and label the parts of the flower, state their functions and give their magnifications. Like

Paul's physics lesson at Kigali Modern School, Benon was unable to link the subject matter knowledge of the 'theory' part of the lesson to the 'practice' part. Consequently, the students were making inferences and deductions based on text book knowledge but not the observations made in the practical aspect of the lesson. Benon had asked the students to measure and draw a flower using a magnifying glass. He had insisted on the positioning of the flower before drawing it from a certain angle. However, some students drew the flower without following his instructions. The students' drawing was based on theory about plants and flowers they had acquired from the theory of the first part of the lesson, but were unable to transfer that knowledge and adapt it to a different situation using a magnifying glass in the second part of the lesson and therefore the drawings were inaccurate.

Based on some classroom practice indicators such as the 'utilization of class time, frequency with which instructional materials were used, teacher-student interaction, student engagement in class activities and time on task' (Sifuna and Kaime, 2007:112), I was able to observe that although the teachers were well aware of, and had expressed interest in learner-centred teaching approaches, and had appreciated the education modules during their training, when it came to actual classroom teaching, they had difficulties using learner-centred pedagogy. The lessons were treated as isolated units, and the teachers did not provide opportunities which would encourage students to link theory with practice. There were no signs of encouraging the students to engage with the activities and with each other, and no guidance or feedback on the students' answers. It was clear that the teachers were not able to deal with disengaged students, or acknowledge and reward correct responses from the students which might be a reflection of their own learning during their training. Although the teachers had appreciated the theory in the Education modules, they had not learned these essential classroom skills.

However, the classes had been orderly, and students certainly were able to demonstrate that they knew some basic information about the lesson. On the other hand, the teachers had displayed limited capacity to provide attention to individual students, or promote a learning environment in which the students would be encouraged to be inquisitive, and be active participants in their own learning. It is possible that the teachers had found difficulty in fostering learner-centred learning environments as a result of the large

classes, or in Benon's case, the fact that both he and the students came from rural backgrounds and may not have been familiar with the science practical teaching methods. On the other hand, in both Paul's (Kigali Modern School), and Benon's (New Rwanda High School), in the classroom interaction, it was clear that both the teacher's questions involved simple factual recall of information and the students' answers were characteristically short, with limited interactions between the teacher and the students and in both cases, the teachers and the students made little effort to ask questions.

In another lesson, Beatrice who taught chemistry in the same school as Paul at Kigali Modern School had been teaching a lesson about gases. In the first part of the lesson, after definitions and descriptions of processes leading to the formation of oxygen, carbon dioxide and nitrogen in which there had been limited interaction with her students, she acknowledged that:

Many activities including seeing, doing, discussions and conclusion are involved. The pedagogical materials and content were very important but problem is that most of the students will not be able to do practice.

A similar experience was to recur at the East Highlands College where Charles taught chemistry and physics. In the physics lesson, he had been teaching about temperature. The first 40 minutes started with the theory in which he asked students the meaning of temperature, what a thermometer was, the difference between degrees centigrade and fahrenheit, and the normal body temperature of human beings. In this lesson, correct answers were rewarded with 'yes', while incorrect answers got 'no'. When in the second part of the lesson he asked students to take some temperature, and plot some graphs, this experience had been quite challenging for the students. In fact, apart from the instructions Charles was reading to the class, he had not demonstrated how such readings could be taken, or how a graph might be drawn in relation to the different readings. Here again, we see a disconnection between theory and practice within a space of one lesson.

Craig, et al (1998:32) have argued that developing new skills and attitudes requires the development of an ability to be flexible in thinking which requires teachers to 'possess content knowledge in their respective subjects, knowledge about teaching and knowledge about finding and using a wide variety of resources from their environment'. From my professional experience, I know that schools have been issued with scientific

equipment. However, many inspection reports stress that this equipment is rarely used. The subject teaching modules had obviously required the teachers to use the equipment which they had never previously done before. So for example, Peter recognised the importance of this:

Teaching science requires not only theory, but also manipulation of some objects which we did not do before the training, but now we can get some things in our schools or in our environment which are as important as the bought ones.

Peter stated that he now had knowledge of how ‘I can use local materials instead of imported ones and I know how to work with students’. From Peter’s perspective, he was able to make the leap from using the materials himself to ways that he could incorporate their use into his lessons. In spite of such experience, there was inconsistency in the lesson plans. They lacked appropriate detail in terms of lesson development, even if the teachers seemed to indicate some steps that were meant to help the lesson to unfold. It was hard to identify appropriate activities that would create a classroom climate in which there was meaningful interactive classroom practice. The course seems to have had difficulties in striking an appropriate balance between upgrading content skills in subjects, and developing pedagogical and professional skills, attempting both with little successful integration. However, Collin indicated that ‘as people learn they gain better ways of doing things, such as learning new methods like lesson preparation.’ Providing learning opportunities impacts on student progress, therefore the key role of teachers in the training is important for student learning which requires skills in planning how the lesson will be conducted.

5.4: What effect does the Rwandan in-service training programme have on teachers’ professional identity?

In this research, the teachers’ beliefs were variously communicated to include the development of confidence, pride, respect and security. These experiences are interesting as ‘changes in attitudes and beliefs generally follow, rather than precede changes in behaviour’ (Elmore, 2002:18). In this respect, Peter had appreciated some of the training experience, as he pointed out that he had ‘learned the skills for working

with others'. When I asked him what experiences had impacted on his professional practice in a profound way, he replied:

Yes, it has influenced me and I have developed patience to work in hard or in difficult conditions because for us in the rural areas it was hard to find teaching materials or somebody to help you.

Responses from the participants to the question about the influence of the training on their professional identity attracted positive responses in terms of the acquisition of values. Beatrice intimated that she had 'gained confidence in dealing with people.' Given the nature of this positive attitude and disposition, one would wonder what relationship there is with classroom practice. Feiman-Nemser (2001:1043) points out that such a relationship may be looked at in terms of teachers beginning to create new understandings and building a new 'professional culture in which over time they develop a stronger sense of themselves as contributing members of the profession, and become participants in the improvement of teaching and learning'. Benon had felt 'proud about my new status as a trained and qualified teacher', and that the training had 'given me confidence as a teacher'.

The teachers indicated that they had developed knowledge of their needs and were in a position to spell them out and express them. The Rwandan teacher professional development programme needs to raise high expectations and promote a sense of motivation and interest for learning to reinforce the current teacher beliefs in what they have gained from the training. This would be an incentive for the teachers to aim higher. Collin said that his training had influenced his professional identity in such a way that 'now I have become very confident of what I am, and I want to struggle to do training and get a better degree.' Teachers such as Collin seem to have been encouraged by the modest progress they made in their professional training in spite the problems they encountered.

The teachers also expressed some form of realisation of their self-worth as a result of their training. Collin reiterated that what he had learned during his professional training was 'to be proud of being a qualified teacher, as my personality has been developed further'. This sense of self-worth is important because if teachers 'develop greater self-understanding, are more reflective, more sensitive, more empathic, and more fully self-actualised, they would inevitably be better teachers' (Vonk, 1995:291). However, other

researchers such as Cope and Stephen (2000) cast doubt on the opportunities for practising teachers to reflect effectively on their teaching. They claim that it causes difficulty because, while teachers may regard reflective experiences as desirable, they are less clear about its feasibility and the rigours of the immediate demands of practice. Thus teachers are less likely to present and discuss alternative methodologies, and when courses are seen to focus on a strategy or orientation of critical reflection, it may not be seen as central by many practising teachers.

It probably will take many years before a Rwandan teacher reaches this level and sense of self-actualisation. Nonetheless, the teacher professional development programme is being recognized after the teachers had graduated from the training and they attach some value to it. Bonnie spoke of his personal commitment to his professional development which gave him a new attitude:

Being in the training requires commitment and I am happy for the commitment I made and for refreshing my skills, as it gave me a positive attitude and being recognised by the Ministry of Education.

In terms of the acquisition of positive values, the teachers said that they had gained respect from society. Paul said that his professional practice as a teacher had been changed because ‘now I am more respected, and although there were many problems, I feel that I am better’. The Ministry of Education needs to support the training programme further to enhance teachers’ capacity for teaching and learning at the classroom level and in turn enhance their professional identity. Elena saw such benefits beyond her personal benefits when she said that her training had influenced her current professional identity because ‘as a teacher I must be an example to my students, so I work with others to train students to be leaders of tomorrow.’ The teachers acknowledge that the training had helped them improve their security and believe their status has been enhanced. Elena was emphatic in this respect:

Now I feel happy and confident because I have a better qualification and more security, and so I believe that my status as a qualified teacher has improved even if we had many problems.

Benon also said that the training had increased his ‘confidence in my self knowledge in that I can now deliver good service to my school’, and that he had ‘learned how to work with other teachers and to help one another’. Most significantly, several participants

referred to '*Uko byagenda kose, nzabona diplome yanjye*', meaning, 'no matter what happened; I was determined to get my diploma'. There were common references to 'being more respected', being 'proud', 'gaining confidence', being recognised and 'earning more salary' because of the new qualification. Chris thought that the training had made him 'proud, disciplined and tolerant person, feeling more confident as a respected teacher'. He added that the training had also helped him 'to get the required qualification in teaching, so it improved my level of education.' Whether Chris's form of motivation was intrinsically or extrinsically generated was another matter. Perhaps it is this newly acquired qualification that motivated and led the teachers to develop positive attitudes about themselves, and to see themselves as changed individuals. What made the teachers to develop beliefs and values in themselves needs to be scrutinised further. The issue of teachers' professional development is a quite complicated one as it depends on teachers' beliefs about what effect the training had had on them.

Recent research has pointed to the role of professional development of teachers which ought to be to help student teachers learn including helping teachers to 'identify conflicts and contradictions, vagueness and even blind spots in their vision' (Hammerness, 2003:54). This implies that to teach, teachers must engage knowledge, yet there is little agreement in the field of teacher education as to which 'knowledge matters, or even what might be the matter with knowledge', nor is there much understanding regarding 'how those trying to teach actually learn from their practices, their students, or their incidental anxieties made from acquiring experience' (Britzman, 2000:200).

Nonetheless, understanding and appreciating teacher professional identity is a fundamental role of teacher education programmes and it means 'challenging not only the policies and practices of the schools they work in, but also those of the teacher education programmes they are in' (Nieto, 2000:185). This demands an understanding of factors that promote learning in the work place such as confidence and commitment to meet challenges at work, while recognising that confidence to take these challenges on depends on the extent to which learners feel supported (Eraut, 2000). In the Rwandan context, the journey seems to be still quite long.

5.5: Summary

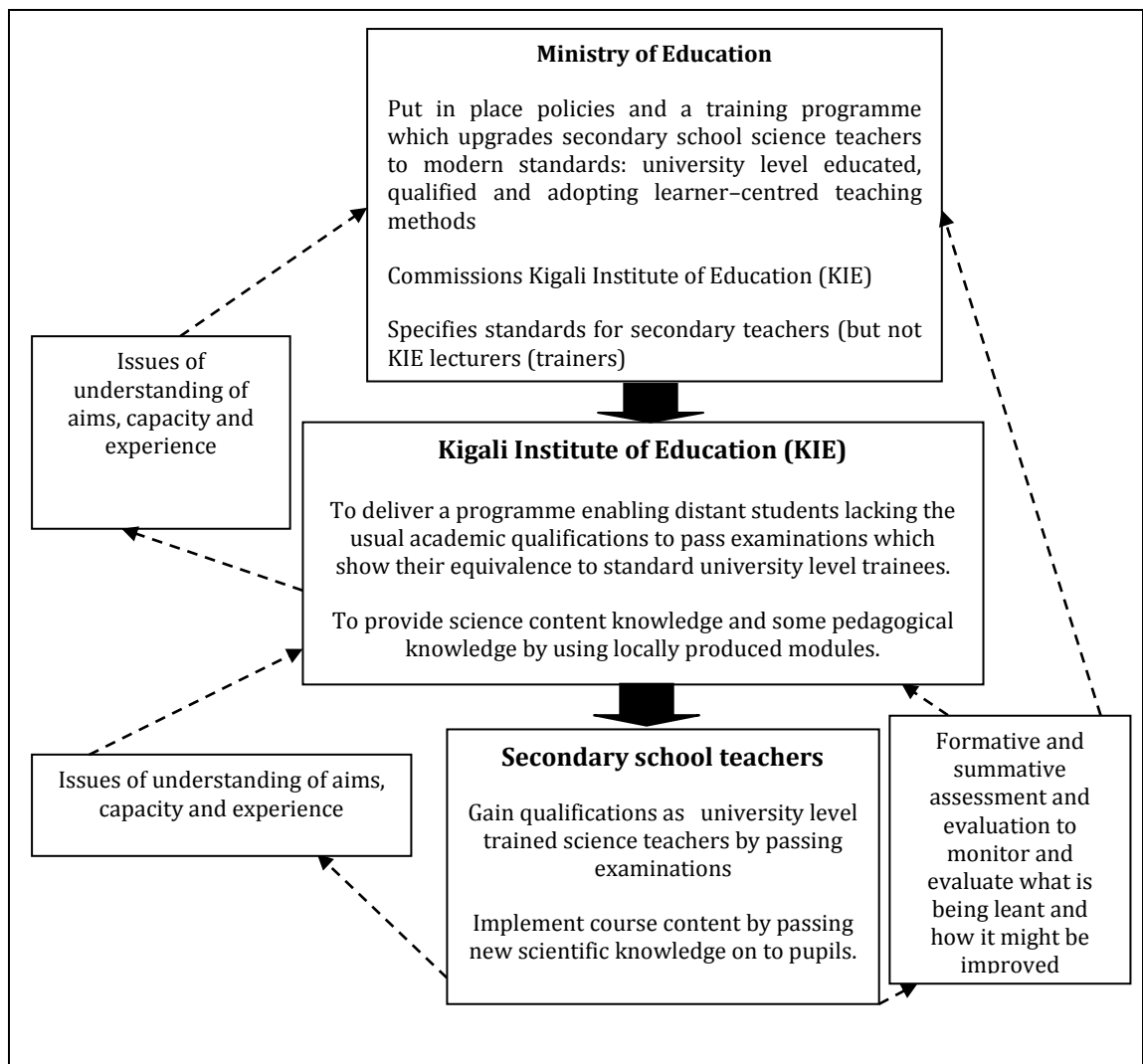
In this research, the teachers' views, experiences and some observed practices reveal mixed feelings about the nature of the benefits of their training programme in terms of the content of the course, and the experiences of the way the teachers were taught and assessed. Notwithstanding the contextual considerations of their training course, and although all the teachers generally agreed that there were various problems, they also thought that the training had improved their confidence, self respect, pride, and recognition, security and enhanced qualifications. On the other hand, it is not clear whether these 'motivating' experiences are sustainable over the long term since I conducted this research only a year after the teachers' had graduated. Also, it is not clear whether the teachers had gained the skills they need to help them better understand their students' own understanding, and whether they can develop learning activities that will facilitate learning development as a result of this training in their respective classrooms. The teachers' views and experiences served as a launch pad to more complex process of further analysing and discussing the results which is the focus of the next chapter.

CHAPTER 6: DISCUSSION

6.1: Introduction

This study has identified key issues and challenges faced by Rwandan teachers and generated an understanding of their experiences during their training. The issues are analysed from the perspective of three key players in the training programme whose relationship is shown below.

Figure 6.1: The relationship between different actors in the in-service training programme.



In this relationship, when the Ministry of Education conceived of the idea to commission the in-service teacher professional development programme, the assumption was that it would enable them to teach well according to standards which are set out in documents which conform to international standards including the Ministry of Education's own policies. However, these expectations seem suspect notwithstanding the huge investments by Government in mobilising the best available resources into teacher education. The research has revealed that the training programme was presented whether deliberately or by default as a course for upgrading teachers' status, and as a way of providing the superficial characteristics of a successful professional training.

For the Ministry of Education, the issue was to set in place a course which would fit in with its modernising agenda. The Ministry was looking for something which would produce the artefacts of a modern educational system. This includes well qualified secondary school teachers particularly in the subjects such as sciences that are recognised as necessary for modern development. It involves the teachers being trained, and the training to be based in the university sector at Kigali Institute of Education. Handing over the task of the upgrading the teachers to the necessary level to Kigali Institute of Education seemed to be the best way of ensuring that this policy agenda would be met. However, there seems to have been little further dialogue between the two parties over the training and what was happening. From this perspective, it would seem as Eraut (2000:454) put it that the whole process of 'design of teacher education programmes may resemble the negotiation of an international treaty more than the design of a simple course by those preparing to teach'.

The research has identified challenges related to identification of needs of the teachers, ensuring that teachers actively engaged with ideas and knowledge through interaction and communication with lecturers, and interrogating content and pedagogical practice. For a course of this nature to be effective, 'throughout the programme of training, schools and teacher preparation institutions share tasks of planning, orienting and managing the practical activities of students' (Avalos, 2000:469). In the Rwandan case, it is unclear whether the intentions of the course from the Ministry of Education's policy perspective were communicated to Kigali Institute of Education, nor whether the

assumptions about the contextual understanding of the lecturers were valid. What we see from the data is an absence of communication and feedback.

Teaching and learning remains a challenge specifically for the Ministry of Education. It requires among other things enhancing the content knowledge and skills of teachers, and not necessarily a problem of how the programme is structured. This experience shows that it is easier for the Ministry of Education to set up relatively good policies, plans, institutions and structures. It is more challenging getting the teacher training institutions to appreciate and understand the problem of knowledge and skills that the teachers need in order to run such a training programme. However, it remains unclear how this end can be achieved without clear accountability mechanisms and well established guidelines on the part of the Ministry of Education for monitoring the training. In this training, the experiences of the teachers are further interrogated below.

6.2: How do Rwandan teachers understand and experience their in-service training?

The teachers' experiences here are related to the dependency on one source of pedagogical materials, the overestimation of the contextual understanding of their training conditions, and the underestimation of the teachers' experiences.

6.2.1: Dependency on one source of pedagogical materials

The Ministry of Education had stated that the training of teachers will ensure a complete understanding of the overall principles of the curriculum and a detailed understanding of subject curricula according to the career plans of individual teachers, and it emphasizes 'learning by doing, active rather than passive learning, and the acquisition of skills, provision of content that allows teachers to tailor individual curricula to local needs and priorities, and to provide content that encourages learners to have a 'can do' attitude to life' (Government of Rwanda, 2003,a:4). It further states that the training programmes at all levels will address the 'needs of the teachers and learners, and how they read, interpret and use pedagogical materials as individuals and in groups', and emphasizes the 'use of well prepared teaching materials and their availability in a medium, and at a time that is convenient for learners of all categories and to take account of their experiences' (p.5).

In this research, the teachers said that their learning conditions were poor. They reiterated that the training programme did not provide the opportunities for them to use readily available pedagogical materials and to acquire the kind of knowledge that was needed to improve their own performance back in their classrooms. Their experiences indicate a divergence between what was espoused by the Ministry of Education policies and what was enacted in the training programme. Under the circumstances, it remains uncertain what the relevance of the programme was to the needs of the teachers. In this scenario, the learning environment can hardly be said to have been tailored to individual needs of the teachers as learners, and the teaching could have hardly resulted in assisting in shaping the minds of the teachers through meaning making. Research evidence (Darling-Hammond, 1998) suggests that teaching and learning through meaning making helps teachers to provide time for learners to build their own relationships among ideas and facts, thereby constructing classroom lessons around big ideas and not small bits of factual information.

The teachers said that they depended on one source of content knowledge; from the modules which they found to be both inadequate and difficult (see section 5.2). The limited and difficult nature of the pedagogical materials raises questions about their link to the curricula, and their effectiveness. The teachers' over reliance on the modules could have made it hard for them to work both in groups and individually, and they were not provided with homework assignments which they could use on their own. As Rwanda is a poor country where people do not have access to a variety of resources, the impact of instructional learning materials is even greater for the teachers especially that they come from rural areas. This state of affairs represents a disconnection between content, pedagogy and learner engagement.

Many of these teachers who live in rural areas needed to learn how to find and use a variety of resources, and not to rely on the modules as the only source of knowledge. A number of research findings (Sandholtz, 2002; Cope and Steven, 2000; Kahne and Westheimer, 2000) contend that finding a variety of resources demands collaboration in which teachers use interactions among students to enhance discourse and learning. It demands an improvement in coordination with fellow teachers by practising, studying common problems, and finding solutions together. Such interactions help teachers to develop abilities to analyse and reflect on teaching practice which in turn helps them to

assess the effects of their teaching, and refine and improve their instruction. Even if the modules could have helped explain some basic principles of biology, chemistry or physics, the teachers considered most of them to be superficial adaptations which did not make much meaning as they said they did not understand the modules. Thus the use of the single source of information in the training meant that it was elevated to a position of being the only way to go about things. This encouraged transmission of factual information based on the notes taken during the lectures (see section 5.2), which was of little significance or consequence to the teachers.

6.2.2: Overestimation of the contextual understanding of the teachers' learning conditions

The findings of this research indicate that the training course had overestimated and made assumptions about the contextual understanding of the teachers' learning conditions. The teachers said that some lecturers did not understand some courses which they were supposed to explain to them (see section 5.2). This may be an indication of significant gaps in the contextual understanding of teachers' conditions compared with the assumptions of the training course. This was compounded by the fact that the teachers did not think that the lecturers had familiarity with the teachers' experiences and the local environments in which the training took place. In order to understand their needs and prior experiences, it was important for the lecturers to become learners of their teachers and learn with them. In a classroom situation, Nieto (2000:184) argues that 'teachers need to learn to become students of their students, a change from the one way learning that usually takes place in classrooms', and teachers need to 'create spaces in which they can learn with their students, and in which students are encouraged to learn about themselves and one another'.

The teachers in this research had not undergone any significant training before they joined the in-service professional development programme and most of them were working in rural areas. They said that during their in-service training it was not only them who struggled with the level, but 'also some of the lecturers who were sent to the training centre to explain modules they said they had not designed and they did not understand these courses which they were supposed to explain to us' (see section 5.2). In this particular setting, the relative poverty of the teachers' initial training and

education and what was available in terms of resources was not taken into consideration. This complicated the understanding of the teachers' training needs. Such a state of affairs was particularly serious since it was this poverty that had provided the Ministry of Education with the rationale for the teacher upgrading course in the first place. Lunenberg, et al., (2007) found this kind of problem quite puzzling, as little is known about the characteristics of teacher educators, in spite of the fact that they are the people who are perceived to be responsible for the quality of the teachers. Thus, 'teachers of teachers, what they are like, what they do, what they think – are systematically over-looked in studies of teacher education. Even researchers are not exactly sure of whom they are' (p.588).

6.2.3: Underestimation of the teachers' experiences

There was also an underestimation of the teachers' experiences. The teachers may have been poorly served in terms of their own background, but they had all been teaching in the Rwandan secondary schools for some time, and therefore know the challenges that the setting faces for which they have formed some strategies. Thus, their situated understanding was not acknowledged. In this case, rather than being seen as a collaborative experience in which the lecturers and the teachers brought their particular understandings together and were in dialogue, the school teachers were seen in very negative terms as lacking in knowledge. The teachers said that 'we lost a lot of time which was not our problem, yet they could blame us for failing in the tests and exams' (see section 5.2). The challenges associated with the lack of such facilitation could have resulted in lost opportunities for the teachers to develop their knowledge and skills. That may explain why the teachers experienced difficulties as they attempted to engage with their students in their classrooms (see section 5.3.3).

Research findings by Britzman (2003), Ball (2000) and Fecho (2000) suggest that to facilitate teacher learning requires an integration of content through pedagogy facilitated in this case by the trainers, but it also depends on whether the content could be oriented towards the knowledge and skills that are expected to change teacher professional practice (see also, Craig, 2003; Hammerness, 2003). If this had been the case it is unlikely that many of the teachers could have repeated the modules, many more failed the course, or getting their diplomas cancelled (see section, 5.3.2). Thus, the gap between the requirements for the training and the teachers' experiences represents a need for

Rwandan teacher education system. This means that the difference between what is in terms of the current state of affairs, and what should be in terms of practically preferred pedagogical practice creates an area of concern.

6.3: To what extent does the Rwandan in-service teacher professional development programme use and promote learner-centred teaching and learning methods?

This section discusses the extent to which learner-centred teaching approaches were used in the training. The key issues identified in this research relate to mastery of content knowledge, recognition of teachers as a learning resource through interaction and communication, the use of assessments that promote learning, and some observed practices in terms of teachers' pedagogical knowledge and pedagogical content knowledge.

6.3.1: Learner-centred teaching and learning

The various Ministry of Education policies had clearly articulated the need for learner-centred teaching approaches in Rwandan classrooms. Nonetheless, this research has revealed the difficult nature of this undertaking. Chan and Elliot (2004:819) contend that using learner-centred teaching methods assumes a constructivist learning model or conception which 'emphasizes the creation of active learning environments that permit critical thinking, discovery, and collaboration', and that this contrasts with the traditional or transmissive learning model which views the 'teacher as the source of knowledge and students as the passive recipients of knowledge, involving receiving information from the teacher and from the textbooks, to help students encounter and learn well defined concepts'.

The results show that the teachers seem to have been unprepared and particularly lacked support to learn and implement learner-centred teaching pedagogy, but were aware of the significance of the learner-centred methods and practical nature of teaching of science (see section 5.3.1). Therefore in spite of the challenges associated with the training programme, possibilities still exist to help the teachers and their students 'to learn more than unconnected facts, which may gradually help raise the quality of education in terms of developing the intellectual capacity and competencies of the

learners with a view to improving teaching and learning' (Dembélé and Miaro (2003:25). In this way, Rwandan teacher training programmes may create opportunities for teacher learning which facilitates their knowledge of the subject matter, use pedagogy appropriate for the content, use appropriate language of instruction and have mastery of that language, create and sustain a conducive learning environment, find out about and respond to the needs and interests of their students and communities, reflect on their teaching and the students' responses, and make changes to the learning environment as necessary, and have a strong work ethic in which they are committed to teaching and care about their students (Dembélé and Miaro, 2003).

Research evidence (Schuh, 2004; Gardner, 1998; Smylie, 1995) has illuminated the need for learner-centred teaching approaches geared towards problem-solving and contextualised in such away that the students become active participants with the teacher acting as a facilitator in the teaching and learning process. This is embedded in the constructivist view of learning in which learners acquire new knowledge by constructing it for themselves. Brooks and Brooks (1993) have observed that learning is perceived as a personal, reflective and transformative process where ideas, experiences and points of view are integrated into the teaching and learning process and knowledge is created. The key focus becomes how teachers learn to make critically reflective judgements in the midst of action and how they subsequently change their actions in response to new insights. From this perspective, learning is 'understood as a self-regulating process of resolving inner cognitive conflicts that often become apparent through concrete experience, collaborative discourse, and reflection' (Brooks and Brooks, 1993: vii). In this way, learning communities become important ways of supporting individual construction of meaning and knowledge.

Lave and Wenger (1991:35) have highlighted the need for a focus on learning as a form of incrementally increasing, but differentiated participation in an existing body of social practice which has provided one useful lens and specifically, that 'learning is an integral part of generative social practice in the lived-in world'. Research evidence (Darling-Hammond, et al, (2002); Grossman, et al, (2001); McGinn and Bolden (1995) suggests that learner-centred teaching and learning focuses on understanding, fosters curiosity and enquiry, and transforms facts which are then integrated into the context of the classroom interactions. This requires an understanding and recognition that learning is a collaborative, problem-solving activity that occurs through progressive construction of

knowledge. It is this process that results into the quality of learning, the kind that the Rwandan Ministry of Education was seeking when it conceived of the idea to start the training programme.

6.3.2: Mastery of content knowledge

In the training the teachers experienced challenges in the understanding of the subject matter which limited their mastery of content knowledge. Ball (2000) suggests that mastery of knowledge involves not only the understanding of concepts and ideas, but demands that the teachers understand how those ideas are to be structured, how they relate to each other and to the context not only of the lessons, but of the whole teaching and learning process. She has identified three problems that stand out which need to be resolved in order to meet such challenges facing teachers who not only know content, but can make use of it to help students learn. They include ‘identifying the content knowledge that matters for teaching, understanding how such knowledge needs to be held, and what it takes to learn to use knowledge in practice’(p.244).

The starting point for the Rwandan training programme may be to recognise and appreciate that there is a difference between the assumptions about the teachers when they are in the training, and when they are teachers in the rural schools where many of them live and work. Either way, the teachers come to class with prior experiences which they can build on. Thus, these teachers can not be empty slates. The Rwandan secondary school teachers were contextual experts, but were relatively less experienced in terms of content knowledge and experience in using equipment. It was important to recognise that ‘knowledge of the learners helps to decide the best time to teach a particular set of skills and the best way to sequence and organise instruction’ (Hlebowitsh, 2005:71). In this particular training, this required a different approach that recognised the creative power of the teachers so that the course could consider their relationship with the teachers as one of a partnership which would produce much more productive professional learning, thereby grasping the very first step which is to understand what the starting point of the teachers might be.

Research evidence (Baker and Smith, 1999; McCoombs, 1997) suggests that learners certainly come into the classrooms with preconceptions about the content which affect the way ideas and activities within each lesson link together, and how each lesson links

to the next one. In the training however, the teachers said that practice time was limited, and that there had been little familiarity with science equipment (see section 5.3.1). This has implications for how the teachers were able to engage in some form of higher order complex reasoning with the context in which the training was taking place. The problem then remained for these teachers who were expected to connect and engage with their own students, and with the science concepts which they had never experienced during their own training.

The absence of the recognition of the teachers' current knowledge and experiences in the training as a starting point for their learning was a major factor in the way they were taught. The teachers said that they had to know everything in the head because tests and examinations were only based on the modules (see section 5.3.2), yet 'this kind of theoretical teaching of science can lead to disastrous results' (Ndirangu, et al, 2003:75). The teachers said that 'those of us who were not fast enough to take notes would give up and copy from our colleagues at a later time and date' (see section 5.2). They had been taught and learned facts, definitions, descriptions, explanations and formulae, all of which did not make sense to them. This is what the training system had encouraged the teachers to do, and as if to reciprocate, the teachers did the same to their students back in their schools.

6.3.3: Recognition of teachers as a learning resource and source of knowledge

It is important to appreciate and acknowledge the importance of the teachers as teaching and learning resources and as sources of knowledge as experienced people. This is because 'knowledge is jointly constructed or negotiated' (Dunne, et al, 2005:15). In the training, the teachers said that they had problems of accessing their lecturers and that there was limited interaction and communication (see section 5.3.1). The absence of the realisation that the teachers had something to offer back given their experiences represents a deficit in their training. The training course may have assumed that the teachers needed information, but may not have recognised their potential as partners in the training in which knowledge needed to be generated and constructed collaboratively. In this enterprise, the teachers could not see themselves as active participants in their own professional development much less as sources of knowledge, as there was limited

interaction and communication. Hargreaves (1995:26) argues that ‘focussing on teachers’ technical competence in isolation essentially makes teacher development a narrow utilitarian exercise that does not question the purpose and parameters of what teachers do’. By the same token, Field and Latta (2000:886) contend further that it is not that the technical competence is an invalid or inappropriate form of knowledge for teaching, but that an exclusive focus on technical competence ‘squeezes out the self in teaching – the ‘who’ is sidelined and silenced by the ‘what’, and that the ‘fragmentation and isolated specialisation that is the earmark of technical rationality produces a form of incoherent hyper-activity’.

In the training, the teachers said that ‘the lecturers were always coming very quickly and teaching very quickly without having enough time to discuss some of the things which had taken place in the lectures’ (see section 5.3.1). The lack of recognition of the teachers as a learning resource and as a source of knowledge as experienced people may have separated the teachers’ daily work from their professional development experiences. Consequently, their professional development could have been disconnected from such experiences both in substance and in setting. It was therefore less likely to deal with the central concerns of the teachers, thereby undermining the potential for professional development to have sustained cumulative impact on teaching (Fullan, 2007). Even when the teachers had expressed such a high level of commitment, they could still find it difficult to embrace a training that was unrelated to their classroom contexts.

The teachers’ experiences in this respect may reflect the power relations between the lecturers and the teachers. The absence of recognition of the teachers’ experiences resulted in complaints about limited interaction and communication between the teachers and their lecturers to ‘explain the content and other concepts which were difficult for us’, (see section 5.2). This reflects a manifestation of the power relations between the lecturers and the teachers. The teachers were being regulated by the terms of engagement set by the trainers instead of it being a collaborative effort. They did not feel empowered to instigate feedback to the authorities which might have improved the situation. The lecturers possessed the feedback power ‘because the agenda for the feedback resided with them and the teacher-learner dynamic was unchallenged’ (Askew and Lodge, 2000:10). In the process, the teachers were unable to appreciate how they as

learners would perceive and interpret information based on what they already knew and what they had experienced. This could be another reflection of the lack of knowledge about the needs of teachers referred to earlier which the trainers required in order to meet expectations. This deficit has a direct relationship with the lack of recognition and appreciation that these teachers already have prior experiences as a result of their familiarity with local conditions of classrooms back in their schools. .

The forgoing contradiction promoted and reinforced the image of the Rwandan teachers as being doubly in deficit when they reproduced a similar unsophisticated transmission model of teaching and learning in their own classes. The teachers had said that they were blamed for failing in tests and exams, and that it was not their weaknesses, or because they did not understand, but because of lack of assistance from their lecturers. This could mirror the monologic and non-interactive pedagogy of the course. Such an experience indicates that even if the lecturers may have possessed relevant substantive propositional knowledge, they might have lacked the understanding of the context in which the teachers worked and also lacked concrete experience of working with rural secondary school teachers. The Ministry of Education therefore seems to have overestimated their contextual understanding of the learning conditions of the teachers in commissioning the course. However, this also reflects the nature of the knowledge and the learning that the Rwandan secondary school teachers on the in-service training course required.

6.3.4: Assessing the teachers

Assessment offers some incentives, both academic and behavioural to motivate students and arouse curiosity. Such incentives come in form of continuous or formative assessment to enable 'regular practice and feedback which is critical as assessment can not be separated from teaching and learning' (Black, 2001:5). In this context, assessment is understood to provide information on the learning process and progress with the view to informing future practice. As such learning and assessment are deemed to be inter-related with this co-constructive view of learning being reflected in assessment. Dann (2002:112) has suggested that with the 'emphasis on the individual learner in an active role interpreting and constructing learning, there seems to be a need to appreciate that this active participation should also be recognised within assessment',

so that the learner may reflect on her developmental process. This is important as the learners need opportunities to 'asses their learning, progress and needs, through out the learning process, not at pre-determined end point, therefore this assertion ultimately challenges us to consider assessment and learning as being part of the same process' (Dann, 2002:.112).

In this research however, the teachers claimed that the course had focussed on summative tests and examinations, and they had not been given opportunities to study and revise so that they could improve the quality of their thinking and therefore of their learning. They said that they were 'not getting assignments to know if we had understood the earlier modules before they brought new ones...', (see section 5.3.2). Learning requires regular practice and feedback and the teachers needed assignments to enable them to revise, and at the same time be able to take some remedial or corrective actions as individuals or in groups where and whenever necessary. This creates active engagement in the teaching and learning process. It however demands the use of a variety of teaching methods and the pacing of material for the achievement of maximum benefits, a commodity that might have been in short supply in the training which the teachers claimed was characterised by the lack of a responsive approach through formative assessment. The teachers said that the course focussed on reading the modules, terminal tests and examinations and was characterised by the distance between them and their lecturers which culminated in poor or limited interaction and communication. This has implications for teachers' acquisition of content and pedagogical knowledge as they said that they were accorded limited time for discussions which might have enabled them to develop arguments together, to discuss some common problems and brainstorm possible solutions.

Black (2001:11) has observed that summative assessments do not enhance feedback from students to their teachers and therefore 'cannot involve significant changes in classroom practice as it limits student involvement there by inhibiting the adjustment of teaching and learning'. With the emphasis on tests and examinations rather than the actual mastery of knowledge and skills, it is doubtful whether the course was able to make sense of national goals of education and interpret them into meaningful and positive learning experiences for the teachers as learners. In turn, since the teachers said that they were ill prepared, they were bound to face challenges in linking assessment to

the developmental needs of their students back in their classrooms. From this perspective, it would be reasonable to suggest that the training focussed on the notion that upgrading the teachers was a question of getting them to pass examinations as a gauge for success of the course.

Reynolds et al (2009:493) argue that over reliance on summative assessments prevents the teachers from deriving their own interpretation of their training experiences and events, and in the process ‘limiting their opportunity to be skilled in acquiring assessment methods appropriate for instructional decisions’. In the process the teachers are denied freedom to think and reflect on the content and pedagogical knowledge they receive. This becomes a barrier to the meaning of the training, is devoid of change for improvement, involves limited understanding, and lacks ‘collaboration and involvement of colleagues and students as partners in the enterprise’ (Dunne, et al, 2005:25). In this particular enterprise, it would seem that the teachers happened to be in a position of relative power that was uncomfortable, a position where they felt oppressed as manifested in the assessments and examinations regime.

From this perspective, it is possible that the course assumed that memory of the modules rather than experience, and having a diploma rather than being a professional teacher who was focussed on student learning was what counted. This mechanistic approach inhibits creative power among learners. Nonetheless, since the teachers knew the level at which their classroom skills were pitched before undertaking the training, they may feel differently. However, although the teachers were from different schools, they were trained by the same people and it is likely that the course promotes that kind of approach which was quite limiting. Research evidence (Eraut, 2000; Ball, 2000; Cochran-Smith, 2000) suggests that it is important to establish standards of practice, supervision, monitoring and feedback which are crucial for the development of teaching and learning. These are the aspects which allow the teachers to reflect on their own practice that leads to improvements in the long run. As it is now, there is no evidence to suggest that these aspects were built into the training programme.

6.3.5: Classroom observations

This section highlights key practices I observed in some classroom settings which are of significance to this research. These practices are discussed from the perspective of

teachers' acquisition of pedagogical knowledge and pedagogical content knowledge. Schweisfurth, (2011:427) cites O'Sullivan, (2006) who makes a 'particular impassioned plea for classroom observation as a means for professionals of all kinds to understand what teachers actually do, as relying on what teachers say they do is not adequate when there is motivation for self-protection or when teachers lack depth of understanding of definitions and expectations.'

6.3.5.1: Teachers' pedagogical knowledge

Schuh (2004:835) suggests that 'instruction based on learner-centred principles provides opportunities for learners to draw on their own experiences and interpretations of the learning processes'. In this respect, presenting a lesson to a class involves engaging students in such a way that the lesson starts from the known to the unknown, that is, their prior knowledge to the new concepts. Where this happens, it helps to identify students of differing characteristics and 'give them attention according to their experiences and abilities and leads to ask one's own questions and to develop curiosity, creativity and enthusiasm' (Perrier and Nsengiyunva, 2003:1113). It also enhances the use of groupings to encourage classroom interaction which in turn enhances motivation and arouses interest and curiosity through discussion and manipulation of objects.

In the lessons I observed lesson presentation was mostly teacher focussed with limited class involvement. Students were unable to demonstrate active and participatory learning skills which were a reflection of the lack of exposure to the learner-centred teaching and learning methods, and therefore the students 'could not grasp the basic concepts which are used in developing science through research (Saiti, 2007:5). The inability to link the lessons with previous material and other concepts seems to be related to problems in the levels and quality of pedagogical knowledge. This had implications for subsequent inability to focus on whether the students would understand the science concepts, or to concentrate on trying to connect ideas and the practical activities within the lesson.

Hammerness (2003:53) suggests that 'building on what is already there provides a means for better understanding what teachers imagine as well as what they already know about teaching and learning'. However, in the training the teachers acknowledged that they lacked people to help them in the use of materials which promotes active

learning activities, and this seems to have impacted on their own teaching back in their classrooms. In all the cases I observed, the teaching followed a similar pattern in the way that subject matter content was presented, suggesting that in one way or the other they shared a general orientation of what they considered teaching to be. This is similar to what Avalos (2000:469) is speaking of when referring to initial training, a situation that may be a result of ‘theory separated from practice, or theory followed by practice, a fragmentation and dullness of the curriculum content, a lack of contact of teacher education institutions with schools and classrooms, and lack of relevance’.

This is related to the classroom observations I experienced (see section 5.3.3), in which Paul’s physics lesson on balancing objects, Benon’s biology lesson on plants and flowers, Beatrice’s chemistry lesson on gases, and Charles’s lesson on temperature, all had similar characteristics – they started off with the first 40 minutes labelled ‘theory’, and ended with the second part as ‘practice’. Students were unable to perform simple skills such as drawing a plant or a flower, measuring it, and recording the measurements. Others were unable to plot graphs, knowing what a slope of a graph is, and how to determine one. Students had clear difficulties in the manipulation of equipment and apparatus, acquisition of skills which included observation, taking readings, recording the readings and making sense of the data. These simple skills had proved such a challenge. Similarly, the teachers could not pose hypotheses, explore ways of testing them, weigh information, and construct their own understanding of what was going on in the classroom activities as they interacted with their students, and to determine why it was happening that way.

This inability to link content knowledge with pedagogical skills poses a dilemma. It may not be surprising considering that the teachers had said that they had lacked pedagogical materials in their training, and coupled with the limited communication and interaction, this seems to have impacted on their secondary school students. In science teaching, most learning activities need to incorporate raw data from student observations, readings of scales, or other manipulative, interactive and physical materials. However, during whole class discussions, there was no evidence of eliciting students’ ideas, opinions and other points of view. Lesson delivery consisted of going through the procedures with little effort to take advantage of the practical activities, and

to seek the understanding of what the students had thought about different ideas, opinions, and concepts.

A different pedagogical practice that appeared as a recurring experience during the lessons concerned the use of questioning skills. Only correct answers were accepted and too little effort was made to use incorrect answers as means of remedying incorrect concepts and ideas. There was little effort to follow-up student answers, re-direct them and prompt or probe to stimulate student involvement and discussion in order to achieve instructional goals. This experience is not limited to Rwanda. It would seem that some 'students in Africa hardly display the urge to ask questions in class, with the belief that science has very little relationship with their own real world' (Jegede, 1997:9). Identifying relationships with students' real world leads to stimulation of student curiosity and enquiry through thoughtful, open-minded questions by way of active interaction.

6.3.5.2: Teachers' pedagogical content knowledge

Teachers' pedagogical knowledge involves the contextual understanding of the students who need to be in dialogue with the content knowledge of their teachers, and build what Shulman (1987:15) refers to as pedagogical content knowledge. His definition of pedagogical content knowledge as 'that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding' is of particular significance to this research. He highlighted the need for a knowledge base for teaching which consisted of seven types, with three of them concerned with content knowledge, pedagogical knowledge (curriculum knowledge) and pedagogical content knowledge. The other four categories relate to general pedagogy, learners and their characteristics, educational contexts, and educational purposes.

Shulman sees pedagogical content knowledge as the kind of knowledge that a teacher needs to transform complex ideas into meaningful representations. It is done by considering the understanding levels of a particular group of students, and appreciates the processes by which knowledge is generated, thereby creating positive attitudes towards the subject matter or content knowledge. Kennedy (1998) also argues that the ability of teachers to bridge the gap between content knowledge and teaching for

understanding is essential for good teaching, as it involves the capacity to transform content knowledge into knowledge for teaching. Thus, the more teachers seek to improve their understanding of the teaching and learning process, the better able they are to reflect and improve upon what they do.

In this research, the interaction between content and pedagogy was only provided in a much disembodied form. This made it difficult for the secondary school teachers to engage with their students in higher levels of learning collaboratively. Improvement of such a situation can be a culmination of an interaction between the various aspects of the teaching and learning context, creating possibilities to engage with students interactively. However, it was hard to figure out how different aspects of the teaching and learning process and the interaction between the teachers and their students fit together. The challenges lie in the design, formulation and articulation of content and pedagogical knowledge. It requires a cross fertilisation of concepts and ideas which emerge and an environment created, that promotes the intercourse between content and pedagogical knowledge, a hybrid of which is essential for more interactive and effective teaching and learning.

The imperatives for the teachers to engage and share ideas with their students and fellow teachers in an interactive environment by acquiring skills to formulate productive learning experiences, by understanding learners' thinking, behaviour, interests and motivation need not be overemphasized. Shulman (1987) stressed the importance of distinguishing between curriculum knowledge related to the materials and programmes on one hand, and the pedagogical content knowledge on the other, precisely because it defines the distinctive bodies of knowledge for teaching. He argued further that it represented the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organised, represented and adapted to the diverse interests and abilities of learners and presented for instruction. For the Rwandan teachers, a significant undertaking is to find ways through which content, pedagogy and learner engagement are connected to each other in one way or the other. This aspect is crucial as it helps teachers to make ideas accessible to their students, but this also depends on students' experiences and other prior understandings of both content knowledge and other concepts, and the context in which such understanding takes place.

This approach might empower teachers to design learning activities in such a way that the various interactions become productive learning experiences. Darling-Hammond (1998) has suggested that such experiences can be motivating as both teacher and students continue to engage with knowledge about, and for learning supported with particular teaching techniques and strategies. The approach encourages learning by doing which links student experiences and other prior knowledge to new knowledge and other learning experiences. In the Rwandan context, the challenges lie in developing the abilities to integrate theory and practice by relating teaching to learning, and by understanding the way the teachers learn, by way of getting them and students to construct meanings or make meanings together.

6.4: What effect does the Rwandan in-service programme have on the teachers' professional identity?

This research has revealed that in addition to professional knowledge, there are also other issues of personal development which help shape teacher identities. The research highlights the issues of qualifications, respect, recognition, self-esteem and status as being crucial to teachers' feelings and beliefs about their identity formation. Thus, this section discusses the development of Rwandan teachers' professional identities in relation to whether content knowledge, pedagogical knowledge and pedagogical content knowledge interacted with other aspects in the formation and development of their identities during their training and after.

Dunne, et al, (2005:153) assert that our identity is constituted positively, and that 'we construct the world from the inside of our identity and similarly reflexively construct ourselves'. This is a starting point to the understanding of the significance of the role of the training to the teachers' professional identities. The teachers said that their status had improved in terms of the newly acquired qualifications, better salaries and respect from their schools and communities (see section 5.4). This is the perspective from which they said they had improved. However, this understanding of the training course limits the professional dimension. From a professional perspective, the teachers found the Foundations of Education modules enjoyable, but at the same time translating these experiences into practical teaching and learning was difficult since the subject content modules were found to be difficult (see section 5.2).

The disconnection between content and pedagogy is at variance with Shulman's (1987) model of teacher knowledge which stresses the importance of content knowledge, pedagogical knowledge and pedagogical content knowledge. The latter is meant to include knowledge in which content knowledge is presented to students and requires teachers to appreciate, recognise and understand student learning difficulties in the context of their previous experiences. These experiences have an impact on teacher self awareness, self esteem and teachers' knowledge about teaching. Nonetheless, since in the training, the content modules were separated from the pedagogy modules, this presented a challenge in the acquisition of professional knowledge with implications for their professional identity. In this case, the teachers' identities were in fact being influenced by their new status as qualified secondary school teachers, recognition by the Ministry of Education and the salary increases associated with it.

It is from this perspective that the teachers were beginning to see themselves in a new light within a different identity context which was being constructed in a process of continuing becoming, and in the context of tensions within discourses which reflects how identities are constructed over time and therefore change with time (Britzman, 2003; Westheimer, 1998). Thus, 'identities are never unified and, increasingly fragmented and fractured, never singular but multiply constructed across different, often intersecting and antagonistic discourses, practices and positions' (Dunne, et al, 2005:153). The teachers' beliefs about being more respected and recognised were an indication of changed attitudes which are essential for their developing identities, but are not necessarily based on, or a result of professional learning. This is the kind of picture that Rwandan teachers are painting in ways related to, and connected with their personal growth and development through their newly acquired status and changed identities.

Looked at from this perspective, the issues of respect, recognition and status which were the basis upon which the teachers were beginning to see themselves in the new light as changed individuals, represents a contradiction in their process of becoming professional teachers. The teachers could already identify with their local communities back in their schools and villages, and could see themselves as 'different', and certainly their personal identities could never be the same again. In spite of this feeling however, the lack of interaction and communication reported by the teachers earlier which implies

a lack of impact of the course, meant that the possibilities of this for learning were minimised. Instead, the new qualifications, status and recognition seemed to work to preserve them in their previous ways of doing things. Any new identity was then the possibility of passing the course, and so being seen as better persons rather than about what they might do in the classrooms, which was to be able to conduct a class in interactive, participatory learner-centred approaches to teaching and learning as required by the policies of the Ministry of Education.

This deficit may be attributed to the fact that none of the teachers in this research had explicitly acknowledged that their knowledge from the Foundations of Education modules had complemented their subject matter knowledge, in such away that they could see themselves as more of biology, chemistry or physics teachers. It was not clear whether their respective subjects had been part of themselves, part of their identity. Be it as it may, the Rwandan teachers were drawing from their previous selves to declare their present selves as changed individuals through their changed status as many of them expressed the desire to continue with their studies immediately after they had graduated. That again might be a reflection of the teachers' trying to imagine what their identities might be like in future if they attained further training. They had attained confidence enough to acquire a sense of direction that projects them into the future, no mean achievement for the teachers many of whom only a few years back had thought of themselves as no more than the villagers with whom they shared their village lives.

Thus, identity formation is complex as it involves multiple interactive forces or dimensions. In this process, the newly formed identities can be fluid and continuous, and the quest for developing a deeper understanding of identity formation can not be separated from professional endeavour to enhance and facilitate personal growth and development. In this respect, it depends on the nature of growth and development of knowledge that the Rwandan teachers acquired over the period of their training and beyond. Thus, the quest for the understanding of teacher professional identity in the Rwandan context remains unresolved and a subject for further research.

6.5: Summary

This study has identified key issues and challenges faced by Rwandan teachers in their professional development programme, and generated an understanding of their

experiences during the training. The first issue concerns the lack of identification of the teachers' needs. The learning conditions were poor and there were no opportunities for the teachers to use readily available pedagogical materials which were limited and difficult to read and understand. Thus, the teachers' engagement with their students was limited resulting in lost opportunities for generation of knowledge essential for the teaching and learning process. The teachers could not acquire the kind of knowledge that was needed to improve their own performance back in their classrooms.

Secondly, there was an overestimation of the contextual understanding of the teachers' training conditions. The course had made assumptions about the context in which the teachers operated including the prior experiences especially of the rural teachers. Thus, the contextual understanding of the lecturers had significant gaps compared with the assumptions of the training course. They do not seem to have had enough familiarity with the teachers' experiences and the local environments in which the training took place. There was an underestimation of the teachers' experiences, yet because the teachers had been teaching in secondary schools for some time, they regard themselves as contextual experts, but the course did not in fact appreciate this experience and use it as a source of knowledge to produce professional learning. This resulted in poor knowledge construction which did not meet teacher expectations and the demands of their training needs.

Another significant experience was the lack of mastery of content knowledge. It is not clear whether the training course had recognised the importance of the teachers as teaching and learning resources. The inability to recognise and appreciate that there is a difference between the assumptions about teachers when they are in the training and when they are teachers mainly in the rural schools represented a major deficit. Thus their professional development was disconnected from such experiences both in substance and in setting.

The disconnection was compounded by limited communication and interaction between the actors in the training programme which was a crucial factor and a source of the challenges faced by the teachers. The poor communication and interaction reflected the power relations in which the teachers were being regulated by the terms of engagement instead of a collaborative effort. The teachers had not felt empowered to instigate feedback power and were therefore unable to appreciate how they as learners would

perceive and interpret information based on what they already knew and what they had experienced.

The training programme exhibited a restrictive assessment system which was characterised by the lack of supervision and support, lack of monitoring of progress through formative assessment, and there was no feedback resulting in the cancellation of the teachers' results without explanation (see section 5.3.2). The assessment system employed the use of summative assessments that came at the end without due consideration for a need for either remedial work, or correcting learning errors progressively through formative assessments during the course of the training. This experience had portrayed the teachers as the oppressed learners due to the power relations.

There is also a significant issue which concerns the nature of the differences in understanding of what teaching and learning is or should be, and what actually took place in the training of the teachers and in the secondary schools. While the Ministry of Education's position enacted in the various policies was that teaching and learning should be learner-centred, the lack of interaction and communication in the training, and the classroom observed practices indicate a mismatch between the understandings of the various actors' espoused positions.

The research has highlighted some issues which are not necessarily of a professional nature, but which are of significance to the understanding of teacher professional identity. In the Rwandan case, the teachers seem to associate identity formation with the social developmental issues of qualification, status, recognition and self-esteem which they consider to be crucial to their identity formation.

The research has also contributed to the illumination of both literature and methodology for future studies on the subject of teacher professional development. It has contributed to the current debate on the benefits of teacher professional development and its impact on teacher professional identity in Rwanda. This needs to be viewed against the backdrop of teaching and learning experiences in schools. Thus, the study contributes to practical knowledge through its illumination of the gap between theory and practice in teacher professional development provision in Rwanda.

It is reasonable to conclude that a commendable effort has been made, this being the very first group of graduates on the Rwandan in-service teacher professional development programme. However, the research findings suggest that the training programme is setting its sights too low and that a review of the in-service teacher training is now necessary. The aim of this review could be to remedy some of the weaknesses identified in this research.

CHAPTER 7: CONCLUSION

7.1: Introduction

This research sought to investigate how Rwandan teachers experienced their in-service training programme, the extent to which the training used learner-centred teaching approaches, and the effect it had on teachers' professional identity. I considered that the teachers were the real insiders, and therefore my primary source of understanding the training experience. By way of conclusion, I offer a brief synthesis of my previous discussions according to each research question.

7.2: Research questions revisited

7.2.1: How do Rwandan teachers experience the in-service teacher training programme?

The teachers' experiences of the training programme indicate challenges related to identification of the teachers' needs as a starting point. Particularly this reflects the restrictive nature of the pedagogical materials given the over reliance on the modules. As a result, the teachers experienced difficulties in engaging with their students resulting in a one way approach characteristic of teacher dominated teaching methods. The instructional materials in form of modules were insufficient and difficult to read and understand. The teachers also said that there was a lack of regular contact and communication, limited practice and feedback, and poor dialogue with their trainers as they were expected to memorise information from the modules for purposes of passing tests and examinations.

When the teachers' experiences are contextualized, the research suggests that there was an overestimation of the understanding of the training context coupled with a lack of recognition of the teachers' experiences as experienced people. There was a deficit of appreciation of the training context in which the teachers were the contextual experts. These experiences indicate that the course had failed to recognise the teachers' contextual experience, and to engage them as partners in order to produce professional learning. The teachers' experiences of their training point to weaknesses in the training

capacity for knowledge construction, inability to meet teacher expectations and lack of responsiveness to the needs and demands of the teachers.

Based on the teachers' experiences, I was able to conclude that the training was presented whether deliberately or by default as an upgrading course, and as a way of providing the superficial characteristics of a successful professional training. Thus, the training was a little more than an application of a model, and not much about an expression of its purpose. The teachers' experiences highlight an irrelevant assessment system with limited supervision and support, lack of monitoring of progress through formative assessment, lack of feedback, and teachers' results were cancelled without sufficient explanation. This experience portrayed the teachers as the oppressed learners owing to the power relations between them and the lecturers who controlled the terms of engagement rather than negotiating mechanisms for knowledge construction through communication, interaction and meaning making.

However, some of these challenges are not unique to Rwanda. Stuart, et al., (2009) have identified similar issues facing teachers, on distance-learning programmes. For example, teachers working in remote schools might not have easy access to libraries and other facilities, women might feel disadvantaged to study on distance learning programmes while most men are on full-time programmes, individual teachers find themselves paying more on transport, etc., distance learning increases teachers' work loads especially women, maintaining motivation where teachers have to study individually and sometimes in isolation can be a challenge, lack of learning materials, lack of support from tutors, and the inability by teachers to assess the quality or suitability of a distance learning programme can all be challenging.

7.2.2: To what extent did the training use and promote learner-centred methods?

The analysis of the teachers' experiences of the teaching and learning approaches used in the training reveals limitations with mastery of content knowledge, the inability to recognise that the teachers as learners had come to class with prior experiences which could be built on, and an appreciation of the teachers as a learning resource and source of knowledge.

Secondly, there is no evidence that the training had essential aspects and ingredients that could help the teachers find voice and space of their own through their interactions and communication with their lecturers, their colleagues and the modules. In the process, the teachers were denied an opportunity to get a feel of the experiences of their training.

The course had also over estimated the content knowledge and made assumptions about what the teachers would know. In addition, the curriculum seems to have had significant gaps compared with the assumptions of the teachers' capacity for self-learning. Teachers had no familiarity with equipment for practical activities, and so this relative poverty of their initial training and education was not taken into consideration. Coupled with this was an underestimation of the teachers' experiences so their situated understanding was not acknowledged as they were only seen as lacking in knowledge.

Another issue concerns the nature of assessment which the teachers said was mainly summative consisting of termly tests and examinations, and as such was irrelevant to the learning needs of the teachers. This practice limited the pedagogical knowledge and the pedagogical content knowledge of the teachers. Consequently, the teachers could not display even basic skills of using students' prior knowledge to build on what they already knew in order to develop more complex representations of new concepts. This suggests that the content knowledge they had acquired from the modules was in itself inadequate, packaged for purposes of certification but not teaching for understanding as such.

The research has revealed limited incentives and innovation in the way the whole programme has been managed. It has revealed how the training programme is academically and professionally isolated from Kigali Institute of Education itself since the teachers indicated that they could not access its library and those of other Rwandan universities through a collaborative arrangement. The research has indicated that the training is conducted in the same way as the pre-service teacher training is conducted with out due consideration for the needs of the teachers.

7.2.3: What effect does the Rwandan in-service programme have on the teachers' professional identity?

This research has identified an important aspect of teacher professional identity. The teachers connected their professional identity to personal benefits such as improved qualifications, respect, recognition, self-esteem and status. They considered these as important to their feelings and beliefs about their identity formation and as their form of improvement. In fact little was said about how they were able to connect content and pedagogy which represented a disconnection in their acquisition of professional learning. This disconnection represents a lack of impact of the course and therefore the possibility of this for learning was minimized, while it served to preserve them in their previous ways of doing things. This meant that the teachers could see themselves as better persons, but in fact what they might be able to do in the classrooms was not their major concern. These findings suggest that a better conceptualised programme might have led to improvements in teaching and learning as a result of the training linked to practice through identity, and informing the teachers' knowledge about what it means to become a good teacher and what it involves.

7.3: Way forward

The research has enabled me to highlight some opportunities and possibilities for the future. Before in-service training is conducted, an initial determination of the needs, interests and strengths of teachers needs to be carried out with full participation of stakeholders, most notably, the school Head teachers and the teachers themselves. It is imperative that it is well planned with clear aims and goals spelt out right from the beginning. Then an indication of how the needs will be met could follow. This includes the provision and use of sufficient pedagogical materials and equipment.

There is need to build an understanding of the context in which the teachers work, and an appreciation of teachers' experiences as a source of knowledge. It is not clear what nature of understanding of the training context lecturers had possessed before they undertook the training of the teachers whose requirements may differ from the pre-service provision they may be familiar with. The challenges which the teachers experienced reflect on the lecturers who may need a better understanding of the

teachers. They certainly had little time to spend with the in-service teachers. Also, the lecturers themselves need training in the conceptualisation of what good teaching is, practise demonstration of good teaching techniques themselves, and offer immediate feedback on regular basis.

Another area of concern is the development of a focus on practical methods to teach subject content and pedagogical content knowledge in meaningful ways that are relevant to students and the teaching context. This demands a creation of a mechanism for on-going guidance, monitoring, practice, feedback and support. This also involves an establishment of an appropriate assessment system combining both formative and summative elements for teaching and learning. This is important because this research has revealed that teaching and learning in Rwanda is still based on rote-learning and memorisation, and that the training tends to reinforce this model. In the case of teachers who already have teaching experience but lack requisite qualifications, there is need to review their training needs. Therefore, the Ministry of Education has a challenge to recognise that the current classroom situation reflects the picture of teaching and learning in our secondary schools. This means that to institute changes at the classroom level, the Ministry of Education requires more comprehensive systemic change efforts.

It is important to conduct an impact evaluation of the training sooner rather than later. The impact evaluation should not just focus on the modes of presentation, the relevance of the training, the adequacy of facilities, and competence of the lecturers. The goal would be to investigate whether the Rwandan teacher beliefs and attitudes have actually changed for the better, and whether these changes have manifested themselves and are reflected in classroom practice, and what that means for the Ministry of Education policy development agenda.

From this perspective, a number of issues need to be made more specific. First, the assessment of the programme should be based on the teachers' ability to apply the ideas in practice. It is their teaching that needs to be assessed, and not just their recall of the modules through examinations. Secondly, lecturers who are supposed to be advocating learner centred methods should be modelling the learner centred methods in their training and discussing this with the teachers they are training.

There are also lessons from other contexts (see section 3.6) which are worthy of noting. In particular, research by Schweisfurth (2011), O'Sullivan (2010), Stuart et al., (2009) and Croft, (2002) offers useful insights. It may be useful for teachers and learners to work towards learner-centred education as a long term goal and then drifting towards new practices, and how learner-centred education needs to be mediated to fit. This requires encouraging learner-centred aspects of local practice which might not to the outsider seem obvious, but need to be built upon. The notion of 'learning-centred' pedagogy is also worth noting which means using what works to help pupils to learn, rather than learner-centred (Croft 2002). In addition, teacher educator knowledge, pedagogical knowledge, and pedagogical content knowledge are critical since these are what teachers need in order to improve their teaching. There is need to consider the role of context and to take contextual realities into account. Taking contextual realities into account enables the making use of international best practices and research findings, through enabling the addressing issue of transfer that blind application brings about. Also, there is need for supporting student teachers which is a critical role of teacher educators. Related to this is the important factor of practitioner research and reflective practice which are critical to the role of all teachers and needs to be supported through professional training. This needs to go a long with the provision of structured professional development support to new teacher educators.

Another point concerns teacher professional identity. According to Welmond (2002:42), teacher identity refers to 'both the personal experience and role of teachers in a given society, including both the subjective sense of individuals who engage in the occupation of teaching and how others view teachers'. The question of teacher professional identity is quite complicated as it shows how different kinds of teacher identity construct varying rationales for teacher professional development, so that there will be variations across cultures and societies. The point to note here is that due to varying interests and changing circumstances, teacher identity is dynamic and contested and is not the same across cultures and societies; therefore it is an issue that needs careful attention in teacher professional development.

Finally and connected to the others, professional development needs to be based on partnership between teachers and learners where participants are brought into the centre of what is planned and practiced and treated as colleagues, acknowledging that there

are issues of status and esteem for teachers. Treating them as passive learners who are kept in the dark about what is going on only reinforces this. It focuses them on the desire to win recognition through outward signs—the achievement of the diploma, rather than through the generation of knowledge by way of meaningful interactions with their students. I am of the conviction that these conclusions might also be offered as relevant for similar work in other places.

7.4: Reflection

7.4.1: Reflection on methodology

In this research, data collection was based on interviews complemented by classroom observations and documentary analysis. By combining interviews and observations, I was able to identify professional issues during classroom observations and then follow them up for discussion during the interview which generated rich data. Therefore, in terms of contributions to practical knowledge, those involved in training teachers in Rwanda and other researchers could carry out their own research using this method. I have demonstrated that by following up in interviews some issues I had identified in the classroom and vice versa, I was able to construct a basis for generating an understanding of the experiences of the Rwandan teachers during their training. Thus, this research has contributed to the illumination of both literature and methodology for future studies on teacher professional development.

I found the research to be an interesting experience. A common challenge associated with insider researchers is the one of bias. During the interview process, it was possible that the relationship between the teachers and me as a senior member of the Ministry of Education management team might have caused some distortions. I wondered whether the teachers were telling me the same experiences as they would to an outsider. For this reason, I returned to the schools and availed the transcribed interviews to most of the respondents for comment and had to integrate some suggested changes in the final script.

As a leading member of a team that had recommended the establishment of the training programme back in 2001, there was a likelihood of being biased towards interpretations that tended to fit in with my personal perceptions during the course of the analysis of

the interview data. However, a colleague pointed out this bias which enabled me to be more sensitive and more careful about the impact of bias as an insider researcher. It was also possible that in some cases, being conscious about the possibility of bias tended to be a limiting factor in itself. There was a possibility of distancing myself so much from the research that there was a danger of missing the opportunity to express myself, yet I can not really claim to be an outsider. Between 2004 and 2005, I was the Chairperson of the committee charged with responsibility to formulate the Teacher Development and Management Policy (2005). Therefore, given that position and experience, I was part of this research process. That wealth of experience has been an invaluable asset in my understanding and discussion of the teachers' experiences of their training programme.

Another concern was with my research sample of three schools which comprised twelve teachers. Initially, I had been apprehensive about this small number and its implications for representativeness and trustworthiness of the results. I wondered whether I could have included lecturers and Management of Kigali Institute of Education. However, I considered that Kigali Institute of Education would be apprehensive and interpret that to be an evaluation of the programme which would have given different results, yet I was interested in the experiences of the teachers. I therefore decided to focus on the teachers. I had also considered the use of focus group discussions, but given the time and other resource constraints, I opted for semi-structured interviews with a smaller number of teachers. I considered that the most important thing for me was to be able to justify my methodology which determines the nature of the outcome.

This research has provided the teachers with an opportunity to air their views, opinions, and experiences about their lived world during the course of their professional development. It is therefore important for Rwandan teacher educators and researchers to draw on insiders' experiences especially the teachers as they are the ones who do the actual teaching. Thus, the Ministry of Education should not rely only on expert opinion to inform policy and practice as this is not necessarily very helpful. However, even if future studies may consider teachers' experiences, it is important to be sensitive about what the teachers say since some of them may be able to tell the story from their own perspective. For example, I conducted this research during the period 2008 / 2009. Although this was eight years since the teachers had embarked on their training, my interview questions always evoked emotional responses about the experiences they had gone through.

7.4.2: Reflection on professional practice

This research has been a form of capacity building for me as an educational policy implementer cum maker in Rwanda, who has now been exposed to a critical view of what is happening on the ground. In this research into a major initiative in training Rwandan teachers, I was able to interrogate pertinent issues such as the extent to which the needs of the teachers were met during the course of their training. At the classroom level, the lesson formats were too prescriptive and forced teachers into unacceptably tight schedule. This means that the Rwandan model of teacher training is in itself too restrictive. The inability to produce teachers who have an awareness and capacity for developing reflective teaching is a reflection of a need for improved training. The teachers' experiences in this research reveal complacency in the training and this explains the prevailing climate in which considerable criticism is being leveled at teaching and learning in secondary schools in Rwanda.

The teacher experiences in this research suggest that the Ministry of Education's attempts to improve teacher training remains slow. There is a challenge of appreciating the tasks Rwandan teachers have to perform back home in their respective rural schools and classrooms. The problem for the teachers is to develop the capacity to understand what those tasks entail and their ability to appreciate and undertake the tasks. This challenge as we have seen is compounded by the context which their trainers do not necessarily understand, and where both the teacher and the trainer are unable to generate together the relevant knowledge and skills they need.

When I started conducting this study back in 2008/2009, (see section 4.4.1), the teachers had just graduated. They had met their requirements by passing some tests and examinations based on some modules. They interpreted this to mean that they had requisite content knowledge and pedagogical knowledge that certified them as qualified secondary school teachers who could teach with respect and recognition. However, what they probably did not and may not know then and now is that whatever knowledge they had acquired lacked a deep understanding of the very science subjects they were teaching as this research has revealed. Even if the teachers had appreciated the Foundations of Education modules compared to the subject matter knowledge modules

in biology, chemistry and physics, evidence shows that a very limited amount of that pedagogical knowledge was applied in the practical activities.

Thus, how the Rwandan training programme overcomes the challenges of the way it is conceptualized will more or less influence the extent to which the training will focus on the development of knowledge and skills to ensure teaching and learning are taking place. Training demands the empowerment of the teachers in order for them to be role models of dedication, working hard to become professional teachers, and to recognise that teaching and learning is a highly complex undertaking. Both the teachers and students came from diverse rural backgrounds and therefore were complex themselves which made interactions even more difficult.

Nonetheless, the results of this research indicate that this group of recently graduated teachers has attained some positive self-identity in terms of improved qualifications, social status, self-esteem and recognition notwithstanding the problems they encountered during their training. This positive attitude is an important starting point as it is the teachers' identity and practices that will help make the best resource in the teaching and learning process. Essentially, that was the very goal of the Ministry of Education's establishment of the in-service teacher training programme.

7.4.3: Possible areas for further research

The research has illuminated key insights into the understanding of the teachers' experiences of their training programme. There are some tentative empirical questions that might help explore this phenomenon through further research which may include: How is the Rwandan teacher education system conceptualized and organised? How effective is the Rwandan teacher training programme? What are the policy implications for the re-conceptualisation of the teacher education curriculum in Rwanda? If teacher educators and other researchers could address such questions, it might throw more light on the understanding of teacher training in Rwanda. This is not to say that the experiences of the pioneer teachers on the programme will be the same as subsequent cohorts, as the contexts may differ. For this reason, future researchers may benefit from the inclusion of school management officials, especially the school heads, lecturers and management, and the Ministry of Education senior officials in research samples. This would allow for more divergent views and even necessitate follow up interviews for

purposes of validating data. This certainly would require more resources, than were available at the time of conducting this research. In any case, this research has been one long journey and such insightful and learning experience for me.

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APPENDIX I: Interview Schedule

Introduction: I am a third year Doctorate in Education (EdD) student at the School of Education, The Sussex Institute, University of Sussex, in the United Kingdom. This interview is for academic reasons only. Information derived from the analysis will be treated as strictly confidential and will ensure that responses can not be traced to respective participants. Analysis of responses will provide useful information which gives a broad picture regarding the way in-service teacher education needs to be developed for Rwandan secondary school teachers. In 2001, the ministry of education started an in-service teacher education programme managed by Kigali Institute of Education. It was aimed at upgrading secondary school teacher qualifications to diploma and degree levels; and to improve their teaching methods and subject matter content. The purpose of this research is to trace graduates of the programme in order to find out their experiences and how such experiences impact on their professional practice.

1. How useful did you find the training generally and what were your professional gains?
2. In your opinion, how appropriate was the training for your needs in terms of training inputs, teaching methods and communication?
3. To what extent did you learn from other participants or other professionals in the field through group work, peer discussions or paired activities?
4. What professional issues and challenges did you experience during your training?
5. How useful were the pedagogical materials, content delivery and the level at which it was pitched?
6. How much of what I observed / you observed today has been influenced by your professional training?
7. What other aspects of your practice as teacher, that is, things I did not see today have changed as a result of your professional training?

8. In what ways do you feel that your professional identity as a teacher has been influenced by your training, and would you say that your professional practice is being influenced by your current professional identity as a trained teacher?

Thank you for your cooperation

APPENDIX II: Classroom observation schedule

CLASSROOM OBSERVATION SCHEDULE		
N°	COMPETENCY	PERFORMANCE INDICATOR
1	Organisation of classroom Teaching	<ul style="list-style-type: none"> - Appropriate lesson plans - Record of work - Classroom arrangement
2	Ability to plan a lesson	<ul style="list-style-type: none"> - Relationship between lesson plan and scheme of work - Clarity of lesson objectives - Sequencing of lesson activities
3	Competency in lesson presentation	<ul style="list-style-type: none"> - Gaining attention and interest of pupils from start to finish - Presenting stimulus material, e.g. teaching aids - Teaching from known to unknown
4	Appropriateness of teaching methods/techniques/strategies	<ul style="list-style-type: none"> - Use of varied approaches - Use of variety of teaching aids - Making use of pupils experiences - Peer/group work
5	Classroom interaction	<ul style="list-style-type: none"> - Pupil involvement and participation - Purposeful a atmosphere - Giving individual attention
6	Content mastery	<ul style="list-style-type: none"> - Confidence in handling lessons - Accurate presentation of materials - Use of appropriate materials and references
7	Management of the learning environment	<ul style="list-style-type: none"> - Good atmosphere - Organisation of activities - Arrangement of desks and materials - Display of pupils work and other materials
8	Communication skills	<ul style="list-style-type: none"> - Class involvement; clear voice - Question re-direction, prompting, probing; relations between teacher and pupils - Pupils encouraged to speak and ask questions
9	Evaluation of pupils	<ul style="list-style-type: none"> - Feedback to pupils - Positive reinforcement - Records of work - Regular assessment - Self evaluation
10	Lesson conclusion	<ul style="list-style-type: none"> - Linkage of lesson to objectives - Clear summary of material or activities - Homework given - Evaluation follow-up

APPENDIX III: Benon's lesson plan

Objective: Students should be able to:

-Measure accurately, draw and label correctly, and comment on features of the provided specimen.

Previous relevant knowledge:

Pupils have learned about different parts of the plant. For example roots, stems leaves and flowers

Time	Lesson content	Teacher Activity	Pupil Activity
10 min	<u>INTRODUCTION</u> Review the previous lesson	Review the previous lesson to link the contents and then state the topics and objectives of the lesson	Review previous lesson with teacher. Answering the questions asked by the teacher.
	<u>DEVELOPMENT</u>		
20 min	<u>STEP 1</u> Structure of flowers	Gives instructions to students and guidelines: - Preparation of specimens (inflorescence flowers) and arrange them on each students desk - Discuss with students the advantages and disadvantages of inflorescence flowers - Explaining the structural arrangements of the flowers of different species.	- Following the instructions provided by Teacher, students discuss in groups the various structures of inflorescence flowers and their importance.
40 min	<u>STEP 2</u> Arrangements of parts of the flower and their functions	Teacher asks questions: - Give students an activity to do in groups and asks them to observe the floral arrangement of inflorescences flower on the main stalk.	- Work on activity in groups then answer the questions as led by teacher under his supervision.

		<ul style="list-style-type: none"> - Teacher asks student to draw and label the parts of the flower and state its functions - Give its approximate magnification. - Marking the exercise done by the students by exchanging their books. - Finally teacher makes general correction on the blackboard. 	<ul style="list-style-type: none"> - Drawing and labelling of the specimen - Calculating magnification - Discuss with the teacher on the naming various parts of the flower.
10 min	<u>CONCLUSION</u>		
	Summary of the content	Summarises what has been covered step by step.	

Self evaluation: -----

APPENDIX IV: Charles' interview

How useful did you find the training generally and what were your professional gains?

The training was useful because we gained a lot of information and knowledge. Training teachers provides more skills to teachers. Also training of teachers makes teachers to change method of teaching. But what I can say is that it was poorly managed due to the time expected for the modules which were not honoured and when it was given out results were not given on time as expected. We complained to the KIE authorities that some of the modules were hard to read and understand and after some time, we received modules that were easier to read and understand. But at the second seating, the exam was not given on time, and science was done without practicals and no practical exams. I can say that difficulties came in the production of modules because if we asked when we should finish our studies, we were asked why we wanted to rush; more over when the module was distributed, we studied it, did assignments but exams were delayed. Exams were prompted to us but results came too late and supplementary exams were also delayed, so yes, in general it was a good programme, but not well managed.

In your opinion, how appropriate was the training for your needs in terms of training inputs, teaching methods and communication?

The training that we need should be organised to make sure that our needs and other requirements are met and the methods that are used should be clear. The communication also used must respond to the needs of those being trained. Teaching methods and communication should be improved because many of us come from the rural areas and we need some one who can understand us and we also understand him or her. We appreciate the training, but the problem was the way it was prepared because it was supposed to help us increase our knowledge, but the content in the modules given to us had some problems which could not assist us in teaching at our schools. We appreciate the corrections made to modules, and some explanations of courses by some lecturers. The programme helped teachers who were not able to continue their university studies due to the 1994 Tutsi genocide, and others had problems of poverty due to family

responsibilities which could not allow them to continue with their studies. I can say that as students in the training we the teachers tried to work together and this helped us in upgrading our methods, and now we can improve our teaching. In my case, when I started teaching after the training, there was some good delivery of the lessons, and students could follow and my relationship with my students improved a lot. The problem was that when we met KIE lecturers who produced modules, they helped us, but some of them abandoned us and we started to encounter problems from lack of explanations. Trainers have a lot to give trainees and we were eager to learn more, that is the reason why we need training but sometimes it did not go well.

To what extent did you learn from other participants or other professionals in the field through group work, peer discussions or paired activities?

Group work is always good because no one is an island. I have observed that many participants are not coming out with many practical ideas in their school, which means that there is need to set up more and more training for teachers where we can meet and discuss. I have learned many things from my participants in class because some teachers have much experience in chemistry, so that we discuss a lot of things in chemistry, about materials and practicals, that we had to do and we shared the experience. The group work that is done in groups should be controlled by the teacher so that participants can observe all activities done in groups. I gained more experience from participants who are my fellow teachers by having discussion with them, some times we could make some mistakes in the practical activities and then we could discuss together what had happened, a learner learns by doing mistakes some times. These days I insist on using students while guiding and helping them to understand what I teach and it's only them who look for answers of the questions they are given; and if they are mistaken some students correct others since I teach students using groups. To me, the reading, manipulation and plotting a graph are the most challenging, but we do discussions and conversation among ourselves to try to understand better, so working in groups is always helpful. Twice a week, we deeply read together and answered given questions, so my friends could help me and some times I also helped them in other activities. We were supposed to use the modules for 6 hours every day, but some of us had no pioneer (role models) at our home, therefore we would not use them after work. The problem is that you could find that one module will take more than two months

which made us study for six years. We read modules individually during working days and some times our lecturers explained what we were not able to understand by ourselves, but the rest of the time, we studied alone. There is a proverb that states that two heads are better than one. So now I believe that I am trainable and I am a willing teacher to learn new ideas, and moreover we learned to help one another, so I can approach my colleagues to see if I can learn something from them.

What Professional issues and challenges did you experience during your training?

Professional issues and challenges which I experienced during training are the use of new methods of teaching and use of materials in practical work. You see, science needs a lot of practise so that you can do better and some modules in chemistry had very few contents that would help to answer questions. We were required to read more books from KIE library of which we had no access. We did not use the library because when we went there we were told by the librarian that we can not enter for unknown reasons, so I can not bother going there again. And even other teachers did not bother to go there, yet we had no other source of information except the modules. Another problem is that at the beginning modules contained some errors and were not clear, and again you see, we wanted the ones which one should read and understand without asking for too many explanations, but some few elements were explained by lecturers. There are so many challenges but they all derive from the long time that the programme took which had no good results for some. There was no expected time for examination and results, and there was no time taken to be given a new module, and no time taken to complete the course. We were supposed to complete in two or three years but we took six years. Examinations were done for the second time but those who passed were not promoted while those who failed didn't have chance to sit for a retake, and also when an exam was done, publication of results was also delayed. Lecturers are highly needed for giving explanations prior to exams of some science modules. The only thing I can say is that even if we experienced many problems, in-service training is good for a trainee because we can continue our work and manage to solve other problems especially for the married ones. But there are challenges especially for women with small babies or kids, who must also take care of their husbands. Those can disturb the training in case children are sick or other usual family related daily life problems. But, it is good the

trainees are not far away from their families and were immediately able to solve those problems.

How useful were the pedagogical materials and content delivery and the level at which it was pitched?

The modules were the only materials we had or we could find in our country, but the content was not sufficient because of the shortage of time. The materials were updated but training was very short, it is better if they could increase time for training. The level must be clear in order to understand what is done in the training. Many times, the lack of modules caused the delay of the programme, and some of those modules were belated, they contained some mistakes but the problem was finally solved, and we lacked somebody to ask for explanations. There are some lecturers who were sent to the training centres to explain modules they did not design and they did not understand these courses which they were supposed to explain to us. Since this training was the first one we would have got enough time to discuss the changes we usually face in our teaching and in our practices in our schools, but any way we gained something...., the revision of modules should be better if it starts with distributing them at the right time and giving exams after one or two months of studies, which must be followed by marks publication. Only the first ones were badly prepared, I can remember that. Another thing is that senior authorities should visit us and solve problems as immediately as they occur...., and they should not use tricky language, instead, the writer should go straight to the point, and should provide glossary for some difficult words. Taking the size of modules into accounts, there are the big ones like four hundred pages which are difficult to cover while some contain difficult elements. Time allocated to trainings is often too little which leads to condensed activities that not everybody is able to grasp all the content of training.

How much of what I observed/ you observed to day has been influenced by your professional training?

Ok, the training upgraded me because I managed to acquire a lot of new information....., yes because of contents in modules that we had read and some practical activities in those science subjects. For me I learned ways of handling students of different ages and ways of questioning, and my working ways changed significantly

because students I teach increased trust in what I teach them, they now understand well and it is proved by the way they answer questions following the lesson. By this training, I have seen lot of materials and the ways of using it, so if my establishment will buy the missing equipments, I will be able to use them. The training has made me a disciplined and tolerant person. I observed much in my training, like how students are used as the centre of learning since normally my physics course is more theoretical than practical and I know that a good theory is accompanied by practical part. The good understanding of science requires practice as much as theory...., and ofcourse, yes, because we have learnt teaching methods such as class control, management and self evaluation. I think self-evaluation is important because it can give me an opportunity to see the areas where I am strong or weak. It can also help me to know where I can improve in the future or in the next lesson. Modules had some contents that helped in teaching, so I learned psychology to understand the thinking of student in secondary schools. Now I know how to prepare a scheme of work preparations and lesson plan....., it was very important because we acquired new things for us who hadn't learnt education, and yes, we became more knowledgeable.

What other aspect of your practice as teacher, that is, things I did not see today have changed as a result of your professional training?

I learned the idea of matching the theory to practical activities through the brainstorming, and I think it helped to interrelate properly my practical work. The new thing for me in this training is the best way of improvisation of apparatus, but there are other apparatus that I don't know their name (in electromagnetic waves, magnetism...., but anyway, all in all, it upgraded me because I managed to acquire a lot of new information....., yes, and like handling students of different ages and ways of questioning. We gained plenty of knowledge we hadn't learnt before, and it shows that we acquired advanced knowledge. A trained teacher is different from a non trained one. That's why if possible a teacher would have training like in the teaching of sciences. Positive results of trainings are witnessed by all who happened to attend. One teaches freely and self-confidently because s/he teaches what s/he learnt and is able to teach adequately in a relatively short time.

In what ways do you feel that your professional identity as a teacher has been influenced by the training, and would you say that your professional practice is being influenced by your current identity as a trained teacher? Please elaborate.

The training helped me to teach more easily and feel proud when students feel that the teacher is a professional one. It creates confidence between teacher and students, so I am really proud that it has made me a disciplined and tolerant person....., I feel more confident as a teacher since I was trained, and I am now socialising with my colleagues and know that most challenges are common not just to one individual....., there was perseverance so it should be maintained because it is very important in sharpening our memories hence the required qualification in teaching, also it improved the level of education and now my salary is better and even life became better. It is less costly for in-service teachers, that programme should go ahead because in-service training is better than full time training. But the training should be planned and revised for a person to gain what he worked for. An example is giving one a diploma today and then withdrawing it tomorrow. They have to give exams on time and produce results and the training should have a precise time management on when to be completed. Easy modules should be given less period of reading compared to hard one like science and education module are not the same. Education modules are simple compared to science module. They should write modules before the programme starts and speed up the programme to avoid that it bores its followers. The training builds hope and confidence in a teacher, it should be maintained because it is very important in sharpening our memories hence the required qualification in teaching. That is why I am proud after

APPENDIX V: Beatrice's interview

How useful did you find the training generally and what were your professional gains?

In the beginning, it was seen as if the training was good and clear because the modules and teachers who taught in KIE could come at our centres to teach us face to face. But as time went on things started to change, because there are some modules we were examined on without getting a lecturer who understands that course in the centre. There are times when he could come but find that it was not easy for him because he was not the one who had prepared that course. After sometime, they made the modules in such a way that every lesson ended with questions and they contained a list of answers. The answers were useful because they could help especially when we were revising for our tests and exams. The training can be made better if the lecturers can find more time for us. I discovered that practical activities are not that hard, but need to practice and then one can gain some skills, and improve his or her knowledge. I gained something to add to what I used to know when teaching and the principles of setting test and examination questions. The training in general was important to us, and it was useful because I have shared ideas with my colleagues, and the teachers from different schools, I learned to be fair in my work and to try being accurate, so this training is useful since it has taught us the way to do lesson plans and scheme of work. This training made me realise that in testing student performance in practical work especially it is very important to have common standards, but then the problem is that this programme was managed badly because they could give out modules when it was not the right time and some times delayed, they did not give correct permanent instructions, and they did not give us answered questions of the finished exams (feedback). And imagine fixing three or two exams in one day! Also, they were writing marks the way they wanted and find that our own marks on our papers were usually different from their written marks (lecturer's records).

In your opinion, how appropriate was the training for your needs in terms of training inputs, teaching methods and communication?

Through my training, I have found information that is interesting especially in the education modules. The training was very important for me because I gained a lot of information manipulation of some material and knowledge of how I can use local materials instead of imported ones, and from this training, I know how to work with students. However, the planning was not good and it was shown by the changing leaders, and the modules which were not available at the right time, and many activities which were not respected and done according to the programme. It was not well planned and it was managed badly, and the evidence is the way the programme which was to last for two or three years doubled that period, so it affected my capacity, and I am sure I could be teaching better if it was not for that problem. The teaching methods were some how good in that they included some practical activities. Many activities including seeing, discussions, doing and conclusion are involved. The pedagogical materials and content were very important but problem is that most of the students will not be able to do practice. Generally the training methods used were somehow appropriate but they should provide enough time for conducting experiments and practice during training, and each person must be flexible and humble. A trainer should be considered as an expert..... Again I can also say that the training led to many of us to increase our chances for further studies, and in our social relations. Its organisation was not very good yet it was meant for developing education system in solving the problems of teachers that was rampant in those days. The management tried to make us love this programme and helped us to follow the government programme because when we finished we were to be examples to others. The only problem was that the lecturers were not caring much about our problems otherwise the progreamme was good.

To what extent did you learn from other participants or other professionals through group work, peer discussions or paired activities?

For me, it has been a chance to acquire the knowledge which I needed to be able to achieve the objectives of my work in my school. I learned communication skills, the working skills, the mindset changes and others, and the training was in general very helpful in acquiring skills and useful information to perform my teaching duties, to know how to work with others in my school even outside my school. The training has helped me to enhance my knowledge and I will contribute to the success of my school. From there, I gained the importance of working in groups, and take consensus working

together in groups, like now I participate in doing projects for empowering maths and science for secondary school teachers in my village. That training taught me how to relate theory and practical lessons although some sessions didn't provide the skills of evaluating practical exams-----, may be due to language barrier and differences in understanding of content by some lecturers----, but on the whole, we used to revise together and even now I discuss with my colleagues at school. We try to work together when we get time, like we discuss when we are preparing lessons to make our lessons better, we used modules also when we had time at school and read through them and even when we were to meet with our lecturers on week-ends and in holidays. We used discussions also when we were preparing our lessons at school because in many modules we could find there what we were teaching. Some of the contents in the modules were not similar with what I teach so I can not use them as teaching aids or teaching materials. Another problem was that there was time when we could spend long time with some of the modules like one or two months.

What professional issues and challenges did you experience during your training?

There is a time when we could wait for the published modules, but they did not come, and others were not clear or easy to understand, but there is also a time when it turned the other way around, some times they were published with many mistakes especially in chemistry and maths modules, where by it became difficult to read them, especially as we could fail to get some one to explain them to us. I thank very much the people who designed the education modules because they were very clear and easy, but I don't thank those who designed maths modules because they used summary, and it was not easy to read them, as they are some students who live in the rural villages, so to read this alone without getting more explanation from either the lecturer or their fellow students, it was a problem to pass this course. There were some education modules you could see that they were not translated well, and those modules had few questions like those that were written before. The problem is that science modules need one to have experience. The last written modules were very clear where there was no need of a teacher, those modules were like students who have teachers, but they are other modules like discourse analysis that was not clear. We just read and clammed what we did not understand, and there other modules that had big volume with many things-----, so to read them all at once was not easy.

How useful were the pedagogical materials and content delivery and the level at which it was pitched?

The education modules were clear, but others were too difficult to be used and understood, as some demanded one to go to the laboratory to understand them better but we were not given time to go there. Many of us who live in rural villages can not read this alone without getting more explanation from either the teacher or their fellow students, and then it becomes a problem to pass this course. Some of the problems needed a library and this was not easy, and even to search on internet was not possible because those modules have few questions like those that were written before, and science modules need one to have experience. Again, the use of pedagogical materials doesn't match with the academic syllabus because the syllabus is too long compared with the time----, and another problem, was how modules reached us, because there was time we spend more than two months without modules and they brought all of them at once and it was not easy to read them all together with the work we were supposed to do. Sometimes, we failed to get lecturers who could explain some courses to us because we used to go to centres and found nobody to help us----, also, there were the problems of failing to get enough time to meet with any other person at the centre who could help us, and there were internet problems. There were problems of modules that delayed to come and when they came, we were immediately examined when we had not yet read them. Another problem was that of lecturers---, some were unable to teach because they said that they were not the ones who had prepared the modules. Imagine writing exams from such modules when we did not get some body to explain them....., this training should be organized better, the modules should be written well to help those who read them to understand them, and they are supposed to be written well where by those who read them feels like they are conversing with the one who wrote it.

How much of what I observed/ you observed today has been influenced by your professional training?

This programme helped me in upgrading the teaching methodology. Some things things we teach, we get them from modules used when we were studying, and and I can make students understand me well, so I can say that there was output, and for sure, knowledge

was gained and upgraded and teaching methods changed. Now I know that more attention should be put to practical activities which my students have been missing a lot. What I am teaching nowadays, I try to relate it to what I have done in my training, but I observed that I have to improve my methods used when setting up questions to allow students to understand the questions which also helps me in my self evaluation because I know that self-evaluation is important because if I teach a lesson and I do self-evaluation, then if I have to teach the lesson again, I know that I can tell my students to do some exercises in a better way.' Yes, in teaching methods and in way of delivering the subject matter, I can say that it is true, this programme helped in upgrading my knowledge. I am sure that if the problems concerning the publication of modules can be solved, the training can have more output. Again I can say that I have learned how to teach using both theory and practice, but before, we could teach when we did not learn teaching methods. This programme helped us as teachers to upgrade ourselves because now I have my diploma, and even if I get another chance I can go for a degree and I am sure that can make me to improve my teaching. Now I prepare my lesson and when I teach I don't face many difficulties as before.

What other aspects of your practice as teacher, that is, things I did not see today have changed as a result of your professional training?

I improved my English. As a teacher I will teach many things with confidence, because in both theory and practice, I have changed, and I want to change what I have been teaching in order to improve my teaching profession, self confidence in teaching, and even to improve on my capacity of reading and understanding things, which need to be increased. Then, I can cope with new technology (ICT)....., yes, we gained a lot in what we knew especially knowledge, and added to what we learned from schools. What I gained in upgrading my teaching methods from this programme organised purposely for teachers, is those things, like the method I use in teaching which is very different from what I used to use before attending this programme....., And yes, I myself learnt to prepare a lesson, how to prepare and set exams, there are many things I gained very much, like learning how to solve the problems I meet in teaching different children because of their different behaviours, this was solved because I learned how to behave in front of them and how I can treat them well. The education modules were of great importance in knowing the behaviour of students and other modules gave us different

knowledge. There are many things gained, especially more knowledge and that is why I can say that that I am now better than what I used to be as I gained more knowledge concerning the way a teacher should behave in his or her job and being exemplary in the government programmes, all these we got them from our programme. This programme inspired us to have the will of continuing to look for more knowledge especially in planning to do more research by reading and looking for more information.

In what ways do you feel that your professional identity as a teacher has been influenced by your professional training, and would you say that your professional practice is being influenced by your current professional identity as a trained teacher?

I gained some ideas of how to work with my friends who teach with me and others in my school, but mainly the confidence of treating students equally whether it is about boys or girls every body gets same treatment, even I can respect them even if they are still children. Now I can teach them knowing that they are going to be the leaders of tomorrow, and also I teach them to try to apply what we learn in theory, so that it can help them in practice....., I also gained confidence in all the things I do whether at school or at home even in my village, I improved in my teaching methods, even the content and how to improvise since we don't have many equipment in my school. Another thing is that now I feel better in my life because my level as a teacher has been raised in status and I got increase in my salary because of my new qualification. I can now develop myself and also my family, yes, I can say that I have improved in my knowledge and I now consider my self to be a professional teacher, which is encouraging. I feel happy and yes, because now I like my profession, I want it to strongly continue, because it upgrades the teachers in what they are and have been doing, yes, because now I teach students to practice what they have already known, because it helps them to remember well what I have taught them....., the programme should be maintained, because those who are in the teaching profession gain a lot in upgrading the knowledge and this helps them to do their jobs better, hence giving value to their work. My training makes me to be proud because I make more contributions which I could not do before because of limited qualifications and my character even has changed because now I know that it can be formed even more or get developed more. I am very proud of making more contributions to my school.